STV 100 Years

Feasibility Study

Comprehensive Neighborhood Improvement Program

CHARLOTTE.

Matheson/The Plaza/Shamrock Intersection

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CHARLOTTE.

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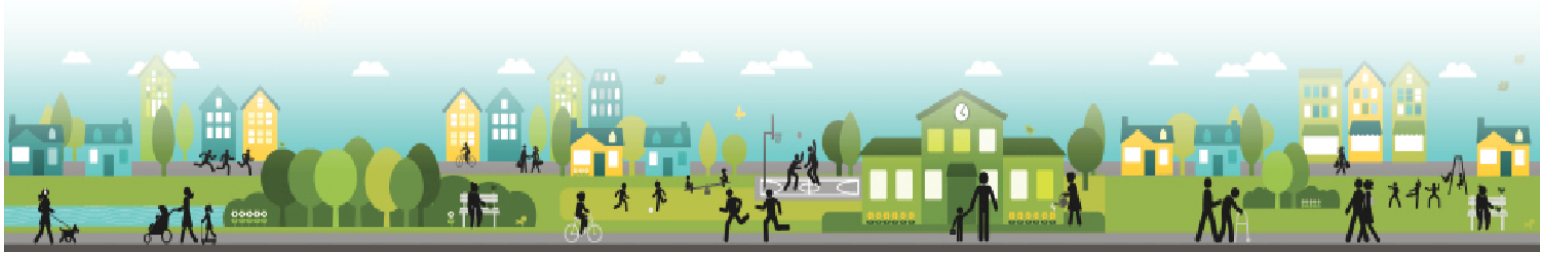

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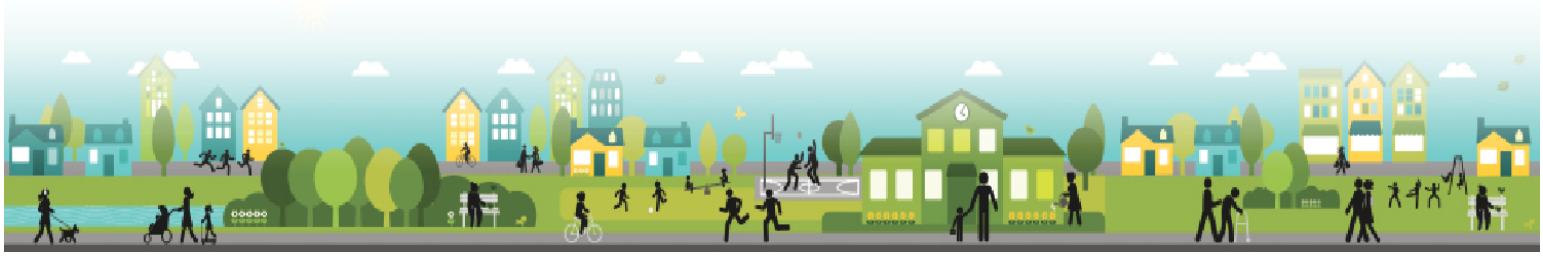


EXECUTIVE SUMMARY

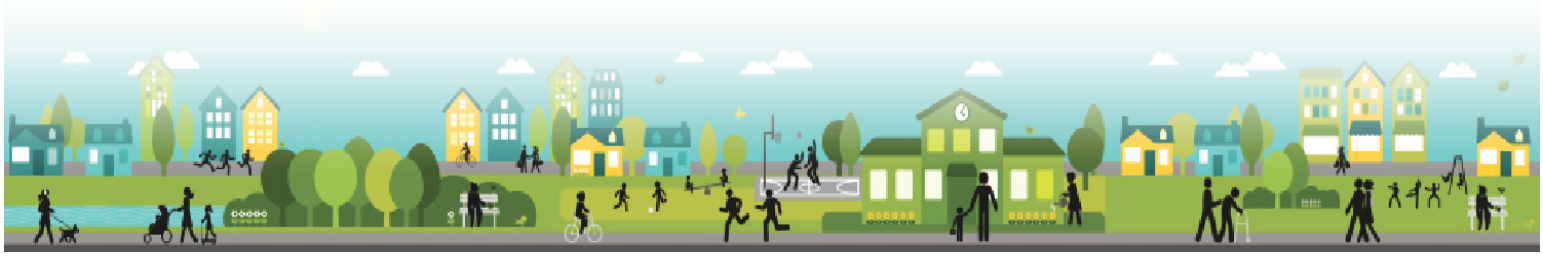
CHARLOTTE.

The Plaza and Matheson intersection is a vital node in the Eastside that links neighborhoods to shopping, restaurants, and other amenities in the surrounding areas (NoDa and Plaza Midwood). Additionally, The Plaza is a commuter route, carrying morning traffic inbound to the City and outbound in the afternoon. The LYNX Blue Line Extension (BLE) and the Cross Charlotte Trail (XCLT) represent major public investments that will increase trips to and from nearby neighborhoods that pass through this intersection. While the BLE and XCLT represent large, transformative projects, many other area projects will work together to create a grid of complete streets improving connectivity and travel options. These projects includes upgrading Matheson Avenue northwest of the intersection, a complete street on Shamrock Drive, a streetscape project on The Plaza east of the intersection (completed) and ongoing planning studies to the west of the intersection. Private investment is highly evident as new homes and remodels are under construction in an effort to meet high demand. Developmental pressures from NoDa and Plaza Midwood coupled with the opening of the BLE in the spring of 2018 has only intensified residential construction. With the presence of strong public and private dollars at work, the crossings at The Plaza and Matheson Ave intersection ties many of these investments together. However, it currently is in need of improvements for both pedestrians and cyclist to better connectivity.

The existing network intersects The Plaza in a unique way such that the grid east of Matheson Avenue converges on the grid west of Matheson to create a dis-uniform network at the intersection of The Plaza and Matheson Avenue. The major North - South move is Matheson to Shamrock but in order for drivers to accomplish this move, they must use a segment of Virginia Avenue. Vehicles traveling through the intersection, turn left on Virginia Avenue and then a right turn on Shamrock Drive. This move is supported by current signage that requires northbound vehicles on Matheson Avenue to yield both to left turning vehicles entering Virginia Avenue and to vehicles turning right from Virginia. This unusual twist is not what a driver expects.

In order make a better connection between Shamrock Drive and Matheson Avenue and address much needed pedestrian and bike infrastructure, six alternatives were developed and screened by the project team as well other key staff representing pedestrian, bike, economic development, and operations. The resultant of this analysis was an off-set tee intersection configuration was the most highly ranked option. This option created coordinated, two phase signalized intersections with The Plaza at Shamrock Drive and Matheson Avenue but removed vehicle access on Matheson Avenue between The Plaza and Virginia Avenue. A multi-use path for pedestrians and bikes was envisioned in place of the roadway and improved bike and pedestrian infrastructure along 34th Street.

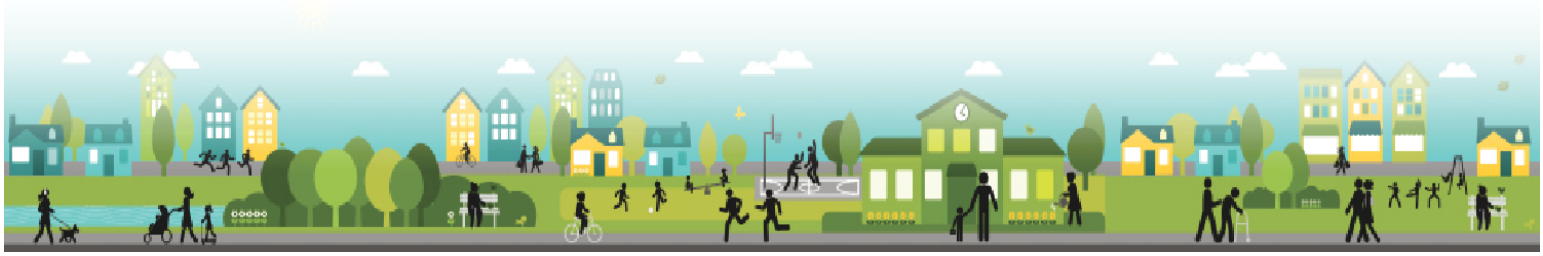
The off-set tee option underwent further development and after meeting with business owners and additional internal discussions with CDOT, vehicle access was included between The Plaza and Virginia Avenue. Additionally, protected intersection principals were incorporated into the recommended concept, **Alternative 6.** These principals include separating pedestrians and cyclist from cars at the intersection by approximately a car length, allowing better reaction times and visibility.



PROJECT SUMMARY

The Plaza and Matheson Avenue Intersection was identified in the Central/Albemarle/ Shamrock Comprehensive Neighborhood Improvement Program (CAS CNIP) for feasibility analysis. The intersection was recognized as a potential project, since it bridge a gap between NECI projects (Matheson Avenue), the BLE, Cross-Charlotte Trail and CNIP Shamrock Drive Project. Currently, vehicles going from Matheson Avenue to and from Shamrock Drive have to make an odd traffic maneuver by briefly turning onto The Plaza or by driving on neighborhood streets such as Virginia Avenue. This is because there is not a straight East West connection from Matheson Avenue to Shamrock Drive The intersection did not receive funding for Planning and Design through the CAS CNIP and will require an alternative funding source or shifting of priorities within the CAS in order to advance the project further.

This report documents the collaborative efforts of City Staff and the Consultant (Project Team) to study feasible alternatives for the The Plaza and Matheson Avenue Intersection and provide a recommended option.



Several guiding principles and policies were used to form the foundation upon which this feasibility study is based. These include:

Transportation Action Plan (TAP)

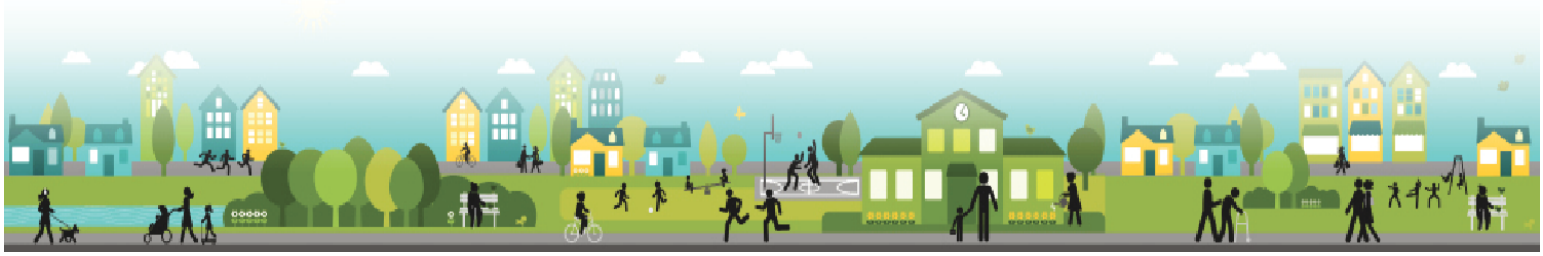
The TAP is the City's first comprehensive transportation plan and is nationally recognized. Its core goal is prioritizing needed infrastructure to accommodate anticipated population growth. The desire is for Charlotte to become the premier city in the nation for integrating land use and transportation choices.

Policy point two in the City of Charlotte's TAP states that we should "prioritize, design, construct, and maintain convenient and efficient transportation facilities to improve safety and neighborhood livability, foster economic development, promote transportation choices, and meet land use objectives." If funded, The Plaza and Matheson Avenue intersection improvements would meet several criteria in policy point two by providing safe facilities for pedestrian, cyclists and vehicles and better connecting the BLE and XCLT to surrounding neighborhoods.

Urban Street Design Guidelines (USDG)

The Urban Street Design Guidelines are a vital supporting component of the TAP because the USDG describes the design and standards for the desired infrastructure to be constructed to support expected growth. The USDG includes methodology and recommendations for implementing key aspects of the TAP such as improving the quality of streets, enhancing the integration of land use and transportation decisions, and providing "complete streets" for residents, property owners, and all types of travelers.

The USDG 6-step process was used to determine the appropriate road classification and typical section. After examining the adjacent land uses and surrounding street network, it was determined that Matheson Avenue and The Plaza should be considered avenues and feature sidewalks, planting strips, bike lanes, and planted medians with center turn lanes where required. Consideration was given to whether bike lanes should be provided on The Plaza, but it was decided for the purpose of the feasibility study to include them in order to yield the largest footprint. Also, a signed bike route runs along Clemson Avenue, across The Plaza onto Brook Road just south of the project intersection. There are bike lanes north of the project limits at E. 36th Street going northwest of The Plaza. The existing sidewalks are narrow and located at back of curb; upgrading or separation of sidewalks would better accommodate pedestrians walking between residential and commercial uses as well as to transit stops.



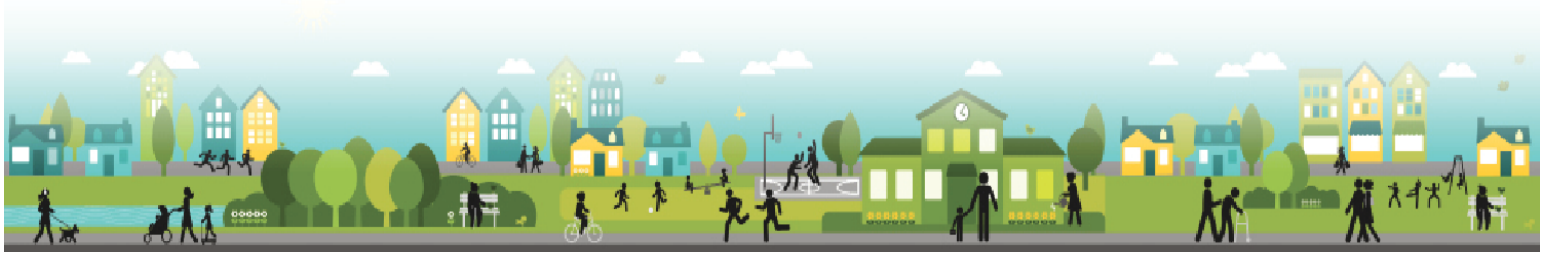
Land use in the area surrounding the intersection consists of predominately commercial, industrial and residential uses. The development near the intersection is primarily fragmented retail and hospitality establishments along The Plaza. Building types and setbacks for commercial establishments seem consistent throughout the intersection with older structures having parking in front.

Residential development/redevelopment is continuing in surrounding areas and interest in commercial development/redevelopment is also present, namely at the block between Matheson Avenue, The Plaza, Shamrock Drive and Virginia Avenue. Developmental pressures from NoDa and Plaza Midwood along with major public works projects including the BLE and XCLT will spur development well into the future.

It should be noted that during the time of this study, the Planning Department is developing a new place making strategy, called Place Types; the feasibility study is contained within a larger area being studied by Planning. An outcome of this new strategy will include the replacement of future land use mapping. The future land use will either be planned as a neighborhood mixed-use center with a centralized node, or more of a commercial corridor that serves the surrounding neighborhoods.

See **Appendix A** for entire USDG 6-Step Process Outline.

See **Appendix B** for Existing and Future Land Use mapping.



Project History

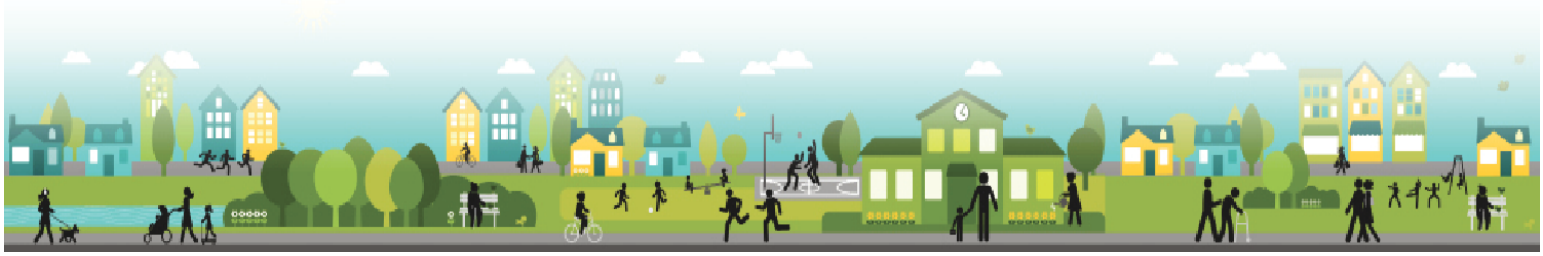
In June of 2014, $816.4 million was approved by City Council for infrastructure improvements that transforms and enhances "Livability, Getting Around, and Job Growth". The City will fund various programs including CNIP through the sale of bonds over four bond cycles. It is anticipated that $120 million will be generated from bond sales for comprehensive neighborhood improvements ($20.0 million in 2014; $40 million each in 2016 and 2018; and $20.0 million 2020). Central/Albermarle/Shamrock CNIP area is slated to receive $20 million in funding over the course of these four bond cycles.

During the development of the Central/Albermarle/Shamrock CNIP, many projects were identified that well exceeded the overall Central/Albermarle/Shamrock budget. Projects were ranked and prioritized and some projects only received funding for further study including The Plaza and Matheson Avenue intersection. In order to advance the project beyond the feasibility report, the project will have to stand on its own as an individual project outside of the CNIP or other funding will need to be cobbled together. This vital link connects multiple projects including:

- BLE
- XCLT
- Bike Lanes/Road Diet on Matheson north of the intersection
- Shamrock Drive Complete Street
- Planning studies east of the intersection on The Plaza
- An already implemented streetscape to the east of the intersection on The Plaza

This key intersection lacks the connectivity, pedestrian or bike accommodations needed to support the overall transportation framework being implemented in the area.

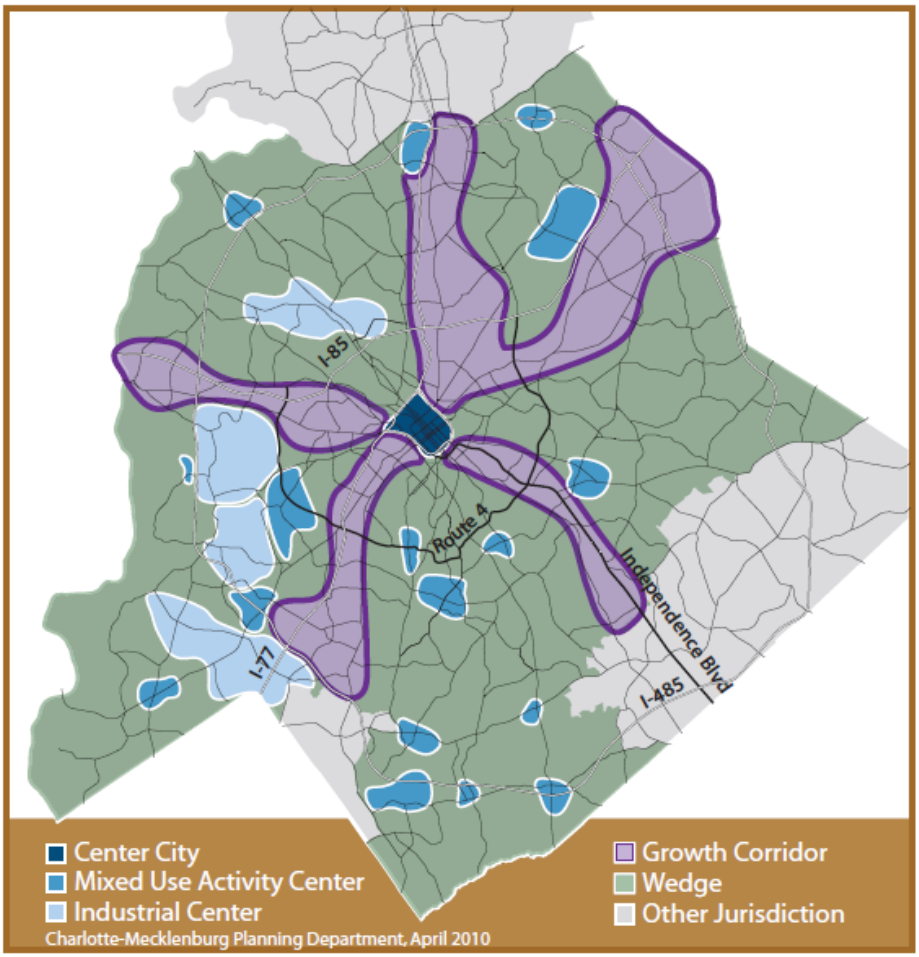
See **Appendix C** for area projects map.

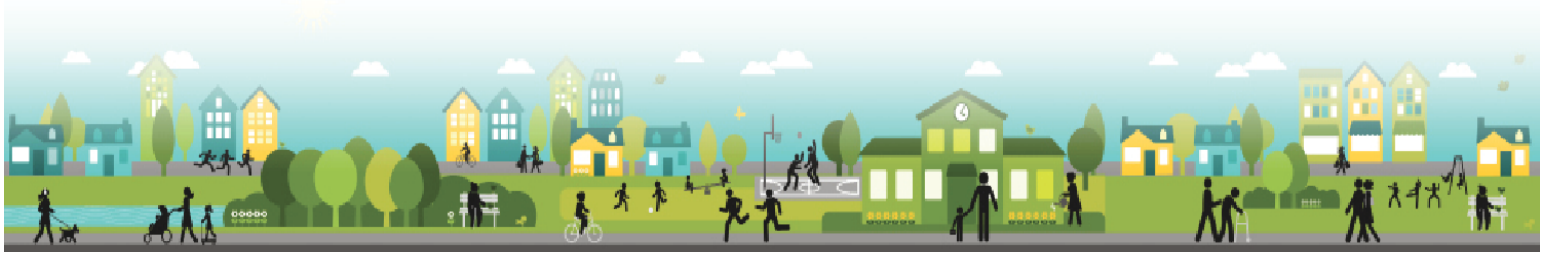


Location and Classification

The Plaza and Matheson Avenue intersection is strategically located in a wedge on the Eastside, close to uptown and on the fringe of the BLE corridor. The intersection represents a significant junction, tying neighborhoods to amenities and serving as a conduit for daily commuter traffic.

FIGURE 3-1: Centers, Corridors, and Wedges; "star" denotes project location





In order to develop a comprehensive list of study alternatives, the team gathered and reviewed available information including:

- Centers Corridors and Wedges Plan 2010 (project is in a wedge)
- The Plaza/Matheson Avenue ICMMEP Feasibility Study
- CAS Advanced Planning Report for CNIP
- Eastside Strategy Plan
- Shamrock Drive Farm-to-Market Feasibility Study 2011

Field visits were conducted to observe tendencies by pedestrians, cyclist, and vehicular traffic in order to develop comprehensive alternatives that maintain, stabilize and revitalize the neighborhood through comprehensive infrastructure improvements, strengthen the neighborhood and surrounding community, and create a pedestrian and bicycle link between East Charlotte and the Cross Charlotte and BLE.

Six (6) study alternatives were developed from this information gathering and for detailed study exhibits of these alternatives can be found in **Appendix E - Conceptual Alternatives** and associated costs can be found in **Appendix F – Conceptual Cost Estimates.** A screening of the first four alternatives were performed by the team as well as other key representatives from CDOT and Economic Development. The alternatives were ranked in terms of the following criteria:

- Network connections for sidewalks and bike infrastructure
- Neighborhood employment (institutional and retail)
- Access to transit and XCLT
- Developable property remaining and property impacts
- Open space and art opportunities
- Operations, geometry, and cost
- Alignment with the community

Alternative 3, offset T-intersection ranked the highest from the screening exercise as shown in Table **4.1: The Plaza/Matheson Avenue Alternative Rankings.**

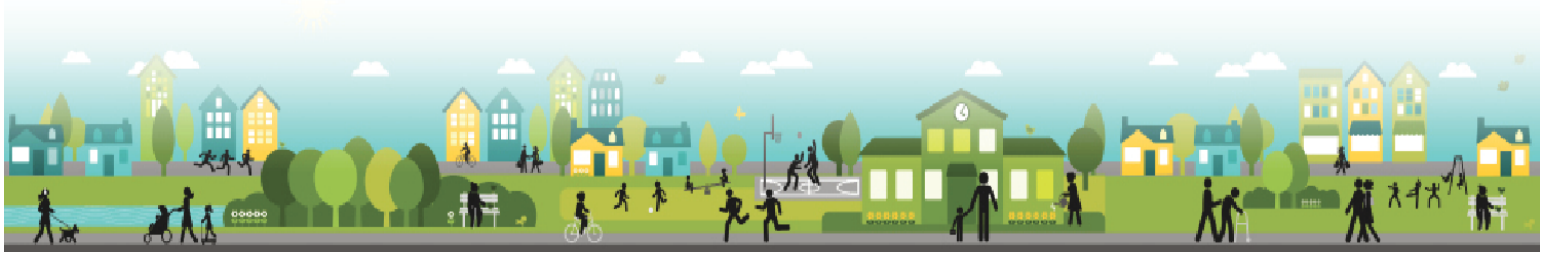
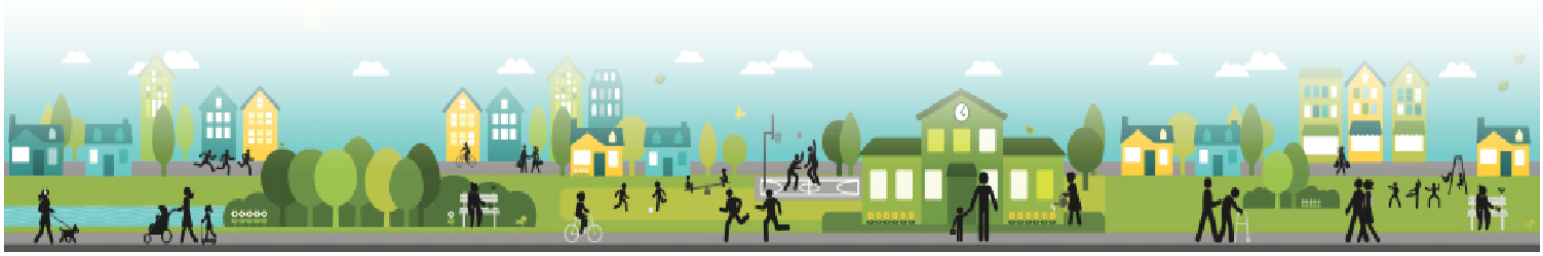


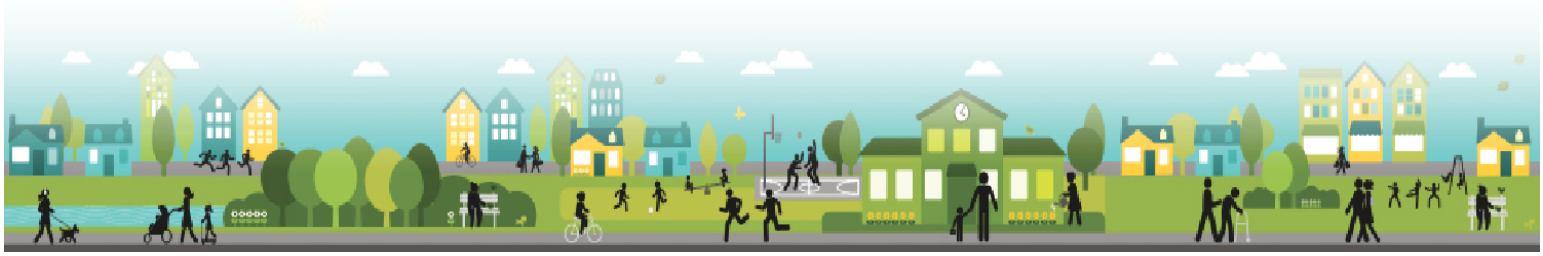
Table 4.1: The Plaza/Matheson Avenue Alternative Rankings

Alternative	Description	Total Score
1	Previously studied in the Plaza/Matheson ICMMEP Feasibility Study, improvements include two-way left turn lane added to The Plaza between Matheson and 36th and a quad left move, where the motorist in order to make a left onto Matheson from NB Plaza would travel through the intersection, making a right onto Shamrock, Right on Virginia and Right onto Matheson. Lefts from SB Plaza onto Matheson would be prohibited and replaced with a new left turn at The Plaza and Shamrock	16.2
1A	Modified Alterative 1 with the addition of two roundabouts at Shamrock and Virginia and Matheson and Virginia	17.7
2	Bowtie Alternative prevents lefts off of the Plaza and utilizes a series of four roundabouts to facilitate lefts. The driver would turn right either at the Shamrock, 34th Street, or Matheson and use the roundabout to make a U-turn.	13.8
2A	Modified Alternative 2 with roundabouts at Shamrock and Virginia and Matheson and Virginia	17
3	Offset Tee-intersections Alternative creates two Tee-intersections at Plaza/Matheson and Plaza/Shamrock. Linked two phase signals will help efficiently move traffic. The alternative also includes an additional lane on Plaza between Matheson and Shamrock that turns into dedicated right turns.	20.3
4	This realignment alternative creates a direct connect between Matheson and Shamrock but creates an undesirable condition at Matheson and Virginia. The team looked at tying these streets back to the re-aligned roadway but deemed the new intersection created would be too close to the Plaza. This option has the highest number of relocates as well. Several re-alignment options were studied with the previous ICMMEP study and the this team further developed the best of those alignments.	16.4

Alternative 3 was the highest ranked alternative from the screening process. It created offset Tee-intersections at The Plaza and Matheson Avenue and at The Plaza and Shamrock Drive removed vehicular traffic on Matheson Avenue south of The Plaza and on 34th Street north of The Plaza. The option also involved re-aligning Shamrock Drive with 34th Street and adding a new signal at this modified intersection. This would create adequate spacing signals at The Plaza and Matheson Avenue. The result of this re-alignment results in up to 6 total takes (a small strip mall, a tire shop, and 4 residences). The strip mall currently leases to a barber shop, small restaurant and has one vacancy. It is possible that some of these residences are rental properties.



The team wanted to understand the significance of this change to local business to determine the viability of this option. The Team met with management of the Food Lion (corner of The Plaza and Matheson), a Dentist office (on Matheson Avenue, just south of The Plaza) and with a Developer owning property adjacent to the Dentist. The removal of traffic on Matheson Avenue put the Dentist office at a disadvantage, making travel to and from the office difficult. A service drive would need to be constructed and the office would have significant reduced visibility. Deliveries to the Food Lion utilize 34th Street and loading docks are situated such that this closure would significantly impact operations in terms of deliveries. Given these impacts, access on these streets were added as the preferred concept was refined. The concept continued advancement included the addition of protected intersection principals. Cyclist and pedestrians are separated from vehicles and given "a head start" before cars are given green time. This promotes better reaction times and visibility for the pedestrian and cyclist. The recommended alternative is Alternative #6 and a concept is shown in **Appendix E - Conceptual Alternatives.**



A traffic study was performed for this study for existing conditions, a no-build scenario, and for Alternative 3 (offset T intersections) and Alternative 4 (realignment of Shamrock Drive into the intersection of Matheson Avenue and The Plaza). Two different Measures of Effectiveness are presented in this report. They include:

- Delay and level of service (LOS): This is the overall average delay per vehicle (in seconds) experienced by a vehicle at the intersection. The LOS ranges from A (minimal congestion) to F (severe congestion) and is based on the delay.
- Intersection Capacity Utilization (ICU): This is a tool used in transportation planning for measuring capacity at a roadway intersection. An ICU percentage of between 90 and 100 means that the intersection is approaching or is at capacity.

The delay and level of service (LOS) results are displayed below in Table 5.1, and the Intersection Capacity Utilization (ICU) percentages are displayed below in Table 5.2.

Table 5.1: The Plaza/Matheson Avenue Delay and LOS Results

Intersection	Existing 2016				No Build 2040				Alternative 3 2040 (Offset T intersection)				Alternative 4 2040 (Realignment)			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
The Plaza at Matheson Avenue	66.9	E	77.2	E	183.8	F	200.3	F	76.6	E	119.3	F	171.1	F	97.2	F
The Plaza at Shamrock Drive									92.4	F	95.4	F				

Table 5.2: The Plaza/Matheson Avenue ICU Results

Intersection	Existing 2016		No Build 2040		Alternative 3 2040 (Offset T Ints.)		Alternative 4 2040 (Realignment)	
	AM	PM	AM	PM	AM	PM	AM	PM
The Plaza at Matheson Avenue	98.6	100.0	128.3	129.5	101.1	109.6	124.3	107.8
The Plaza at Shamrock Drive					103.5	110.8		

The results show that today, in the existing intersection configuration, the intersection is operating at or slightly over capacity. The LOS is E in both peak hours. In the AM peak hour, the majority of traffic on The Plaza is heading southwest towards Uptown Charlotte, causing queueing in the southbound direction on The Plaza approaching Matheson Avenue. This traffic pattern is reversed in the PM peak hour, with a majority of traffic leaving Charlotte, causing queueing and delays in the northbound direction. Additionally, in both peak hours, the amount of green time needed to process through traffic on The Plaza limits time that can be given to left turns and the through movements on Matheson Avenue, contributing to delays on those approaches. In the existing conditions, the Intersection Capacity Utilization (ICU), the results show the intersection is at 98.6% and 100% in the AM peak hours, respectively.

In the no-build (year 2040) scenario, the existing problems at the intersection are amplified, leading the intersection to operate well over capacity and at LOS F in both peak hours. In addition to the average delay being over 180 seconds per vehicle in both peak hours, the ICU percentages are well are between 125% and 130% in both peak hours, indicating the intersection is well beyond capacity. Also, all individual approaches to the intersection operate at LOS E or F in both peak hours.

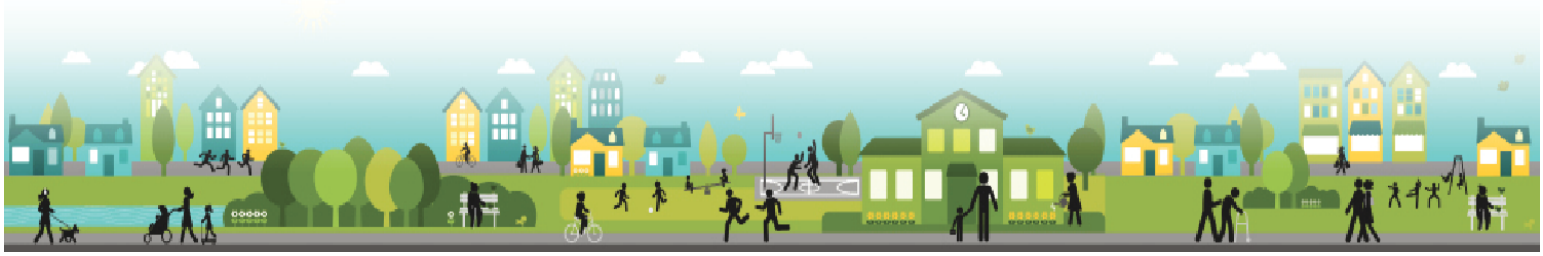
In Alternative 3, the two intersections both operate at LOS E or F in both peak hours; however, the overall average delays are between 75 and 120 seconds per vehicle, which are substantially lower than the no-build scenario. The ICU percentages are also between 100% and 115%, which are lower than the no-build results, but are still over capacity.

In Alternative 4, the intersection operates at LOS F in both peak hours; however, similarly to Alternative 3, the overall delay at the intersection is better than the no-build scenario. The ICU percentages are 124.3% and 107.8% in the AM and PM peak hours, respectively. Alternative 4 performs worse than Alternative 3, and the delay and ICU percentage in the AM peak hour is only slightly better than the no-build scenario.

The overall results indicate that neither the no-build scenario nor either Alternative produce acceptable traffic operations in the future. However, both Alternatives operate better than the no-build scenario, and Alternative 3 outperforms Alternative 4 with lower delays and better ICU percentages.

Note: Additional traffic analysis was not completed on the modified off-set T design, when additional legs were added to the concept. This alternative, like others, was screened out prior to the traffic analysis because of other factors, including the increased number of phases that would be required at the closely spaced signalized intersections. Once these alternatives were screened out, Alternatives 3 and 4 were carried forward for further analysis, including traffic capacity analysis .

See **Appendix D** for additional traffic analysis.



PUBLIC OUTREACH

Public outreach included a combination of visits with various businesses/property owners within the study area as well as presenting the general study area at the Shamrock Street Improvements public meeting.

The purpose of the visits with businesses within the study area was to receive specific feedback on how their businesses operated, accessed their sites, and specific issues they have firsthand knowledge of related to the operation of the intersection. Those interviewed were not meant to be comprehensive, rather a collective of businesses within the corridor to provide a general representation. The businesses visited include:

1) Ballentine Dentistry, 1315 Matheson Ave, Charlotte, NC 28205

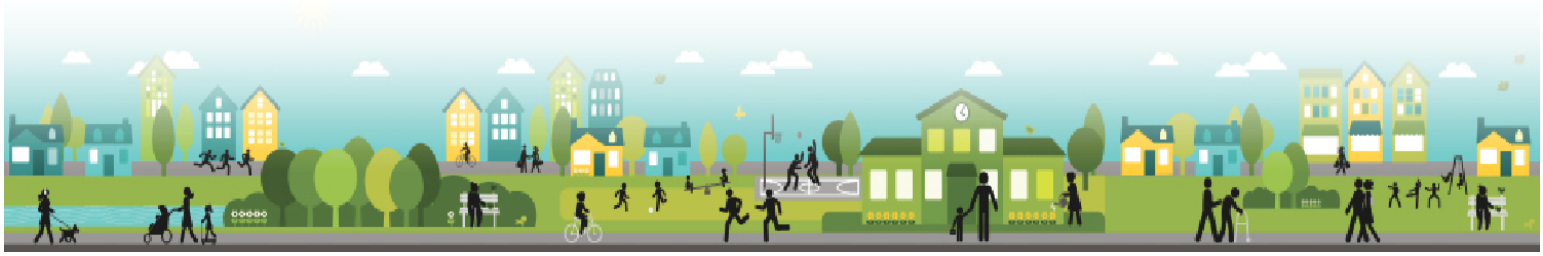
The business can be characterized as a large, well established dentistry serving the local community as well as those well beyond adjacent neighborhoods. Access to the business along Matheson Avenue is critical for visibility and access for customers and employees.

2) Food Lion, 3009 The Plaza, Charlotte, NC 28205

The Food Lion recently underwent a $1,000,000+ renovation, decreasing the probability this property would re-develop anytime soon. Deliveries arrive to the store via 34th Street due to the orientation of docks in the back of the store.

3) New South Properties (NSP), 1518 East 3rd St Suite 200, Charlotte, NC 28204

NSP's owns the property at the corner of The Plaza and Shamrock Drive, which at the time of this report operates as a night club. The night club is on the 2nd year of a 5 year l ease and ultimately NSP's, a developer, sees the property being repurposed for best and highest use.

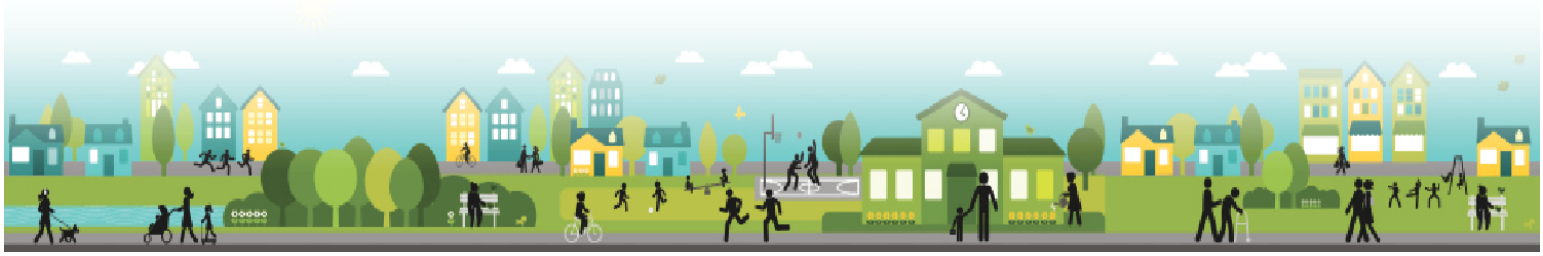


PUBLIC OUTREACH

A public meeting for the Shamrock Drive Street Improvement project was held at Shamrock Drive Elementary School on August 17, 2017. A display of the study area for The Plaza Matheson Feasibility Study was presented in combination with the Shamrock project and staff were available to receive comments. Issues such as a lack of pedestrian and bicycle infrastructure and the unusual path vehicles make to navigate from Matheson to Shamrock, the high volume move were shared. Comments received specifically for the intersection are:

- Would like to see more shops, restaurants and become a more walkable area.
- Most cyclists go Virginia Avenue to Matheson Avenue to The Plaza due to median
- Improve Matheson Avenue/Virginia Avenue intersection. Too many folks don't get three-way stop. It is dangerous. (x2)
- The Shamrock Drive, Matheson Avenue, The Plaza collection of intersections leads to cut through traffic through neighborhood streets.
- Curbs, sidewalks, especially Eastway Drive to The Plaza link. Better intersection tie-in Shamrock Drive to The Plaza aligned with Matheson Ave.
- Intersection and pedestrian crossing improvements at Matheson Avenue and The Plaza and improvement to the Matheson Avenue/Shamrock Drive connection via Virginia Avenue Addition of 2 mid-block crosswalks to cross The Plaza with pedestrian refuges at both mid-block crossings 1) one between Matheson Avenue and 34th Street 2) the second between Matheson Avenue and Holt

Input received during a stake holder meetings as well as those received during the public meeting were discussed during team meetings and led to revisions of Alternative 3, the highest ranking alternative during the initial screening process outlined in Section 5.



CONCLUSION

CHARLOTTE.

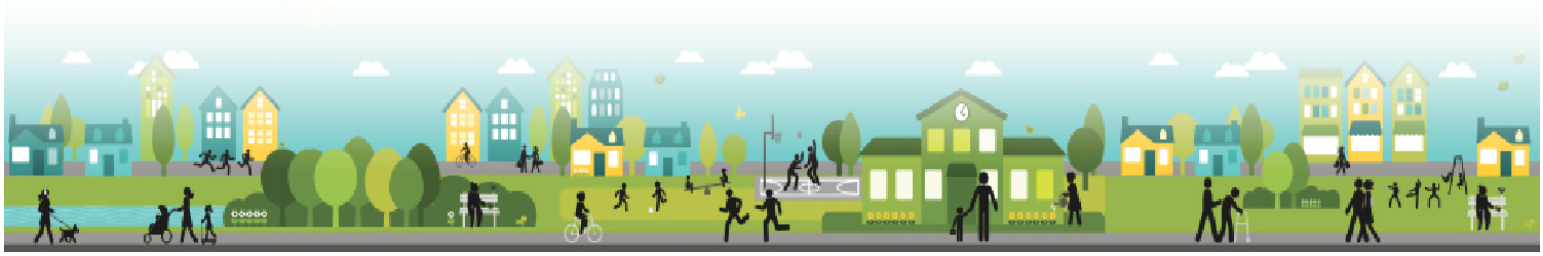
As the City of Charlotte's population continues to grow, the need for safe and efficient multi-modal transportation also grows. The City is planning for the future by creating and following policies such as the Community Investment Plan and the Centers, Corridors, and Wedges Growth Framework.

Based on the findings of this study, the Project Team recommends Alternative 6 as the preferred Alternative (see Appendix E for alternatives) for The Plaza and Matheson Avenue intersection. Starting with the highest ranked alternative from the initial screening process, the team reviewed feedback received from stake holder meetings with businesses and the August 2017 public meeting and incorporated protected intersection principals. Conversations with the business proved invaluable as discussions of visibility and access for deliveries as well as team discussions concerning connectivity drove refinements of the tee-intersection concept, adding additional approaches and creating two four legged intersections at The Plaza/Matheson Avenue and The Plaza/Shamrock Drive./34th Street.. Other recommendations include:

• The City should prioritize the intersection for funding. Property values in this area are rising dramatically and therefore the cost of the intersection may soon become unfavorable.

• Re-development in the area is occurring rapidly given the proximity of the BLE and XCLT. The City may find it beneficial to partner with NSP's given their land ownership. At the time of this report they were very interested in cobbling together any remnant properties as a result of the realignment of Shamrock Drive.

• If this project remains unfunded, the city should consider interim improvements to the Matheson and Virginia intersection and the Shamrock and Virginia intersection since it is not intuitive that left turning vehicles have the right-of-way.

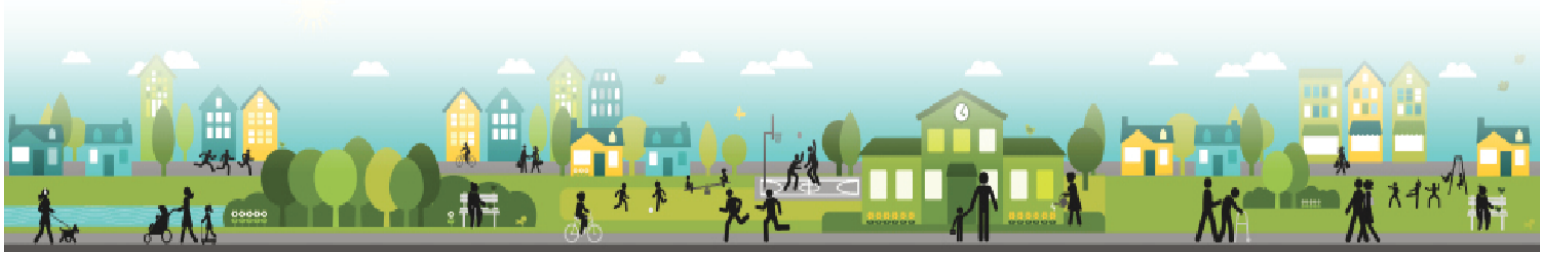


Project Goals:

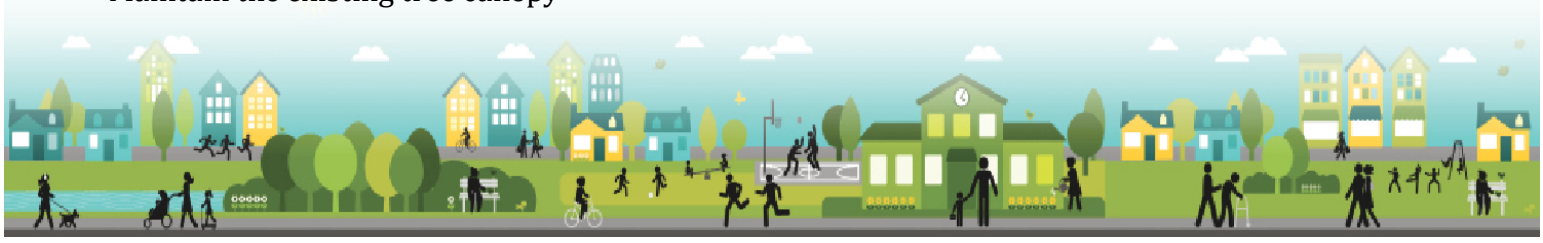
- *To maintain, stabilize and revitalize the neighborhood through comprehensive infrastructure improvements*
- *To strengthen the neighborhood and surrounding community*
- *To create a pedestrian and bicycle link between East Charlotte and the Cross Charlotte Trail*

Step 1: Define the Existing and Future Land Use and Urban Design Context

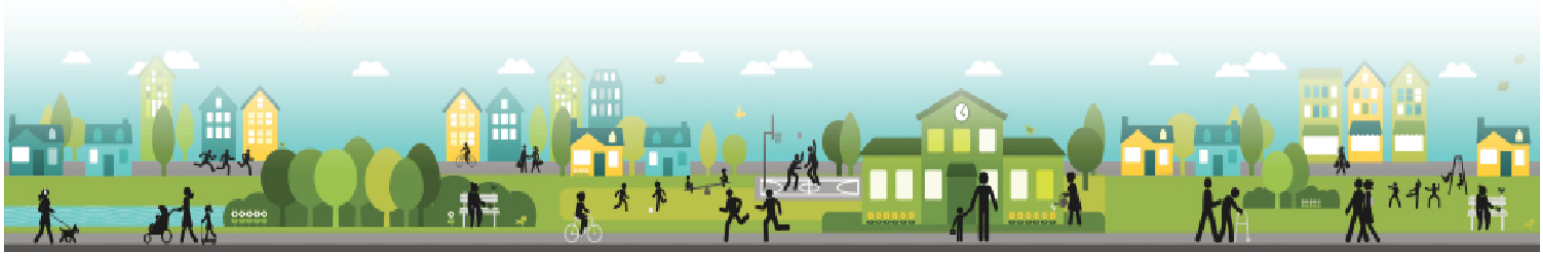
- What does the area look like today? What are today's land use mixtures and densities?
  - o The intersection is located in an area consisting of predominately commercial, industrial and residential uses. The development near the intersection is primarily fragmented retail and hospitality establishments along The Plaza.
  - oFood Lion is located on the northwestern quadrant of the intersection.
- What are the typical building types, their scale, setbacks, urban design characteristics, relation to street, special amenities, etc.?
  - o Building types and setbacks for commercial establishments seem consistent throughout the intersection with older structures having parking in front.
  - o Residential building types include single-family homes on smaller lots.
- Are there any particular development pressures on the area (the nature of this may vary according to whether the area is a Greenfield vs. an infill area and this type of information is particularly important in the absence of an area plan)? What, if anything, can be gleaned from permit data, for example, about the nature of the emerging land use context?
  - o Residential development/redevelopment is continuing in surrounding areas and interest in commercial development/redevelopment is also present, namely at the block between Matheson Avenue, The Plaza, Shamrock Drive and Virginia Avenue
  - o Preservation of residential neighborhoods and containing commercial uses along The Plaza is essential.
- What are the "functions" and the general circulation framework of the neighborhood and adjacent areas?
  - o The immediate area is comprised of mainly destinations (commercial uses) including Food Lion, Tire Depot, CVS and Papa Johns. The surrounding area is comprised of origins (residences) that include single-family homes on smaller lots and multi-family housing along 35th Street and Murdock Road.
  - o Gentrification occurring in the area with renovations/new construction
  - o To get from Matheson Avenue to Shamrock Drive, drivers must turn left onto Virginia Avenue and then free flow right turn onto Shamrock Drive, making a zig-zag movement. Virginia Avenue should be a residential street but acts as a collector/arterial with the amount of traffic on it.
  - o Intersection acts as a key piece in connecting the surrounding areas to the NoDa and Plaza Midwood neighborhoods, CATS Blue Line Extension and the proposed Cross Charlotte Trail.



- Is there a detailed plan for the area? If so, what does the adopted detailed plan envision for the future of the area?
    - o Centers Corridors and Wedges Plan 2010 (project is in a wedge)
    - o Eastside Strategic Plan 2001
    - o North Charlotte Plan 1995
    - o Central District Plan 1993
    - o Central District Plan Adopted Land Use map 1993
    - o Shamrock Drive Farm-to-Market Feasibility Study 2011
    - o CNIP Advanced Planning Report ~ Central/Albemarle/Shamrock
- Does the plan make specific recommendations regarding densities, setbacks, urban design, etc.?
    - o Centers Corridors and Wedges
    - o The amount, intensity and type of new development will be determined by the applicable area plan.
    - o Land use, development intensity and design characteristics vary within Wedges.
    - o The highest density residential should be located where extensive existing transportation facilities and infrastructure are found
    - o A transition, either through a buffer or screening, should be provided between low density residential development and non-residential development
    - o Eastside Strategic Plan
    - o Recommends reducing cut through traffic in neighborhoods by using speed bumps, stop signs, and other traffic calming measures.
    - o North Charlotte Area Plan
    - o Urban Design: streetscape recommendations for the single-family residential neighborhood around Matheson and The Plaza:
- Planting strips along major roadways
- Identifies The Plaza and Matheson Avenue as a neighborhood entry point with signage, lighting and landscaping improvements.
- Plan contains a detailed drawing of the Matheson Avenue and The Plaza intersection's existing conditions (it has drastically change in the past 20 years) to show how a landscaped entry point should look
    - o Central District Plan
    - o Overall Land Use Goals for entire Central District Plan
- Prevent incompatible nonresidential land uses encroaching into existing neighborhoods
- Preserve architectural quality of neighborhoods
- Increase livability
- Upgrade existing housing stock and create affordable housing to promote increased home ownership
- Implement necessary zoning ordinances to create a mix of compact pedestrian oriented land uses
- Maintain the existing tree canopy



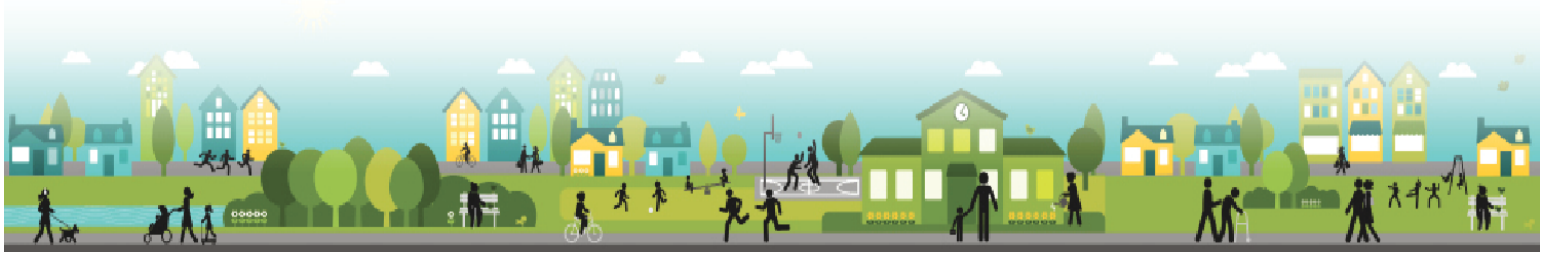
- Land Use and Zoning conflicts
- Prevent incompatible nonresidential land uses encroaching into existing neighborhoods
- Identified as a very important issue of keeping offices and other non-residential uses out of residential areas b/c they are not compatible with the existing character and design of historic neighborhoods; this leads to gradual decay of neighborhoods
- Recommendations revolve around keeping the existing character of establish neighborhoods and use rezoning as a technique to bring the old character back to struggling neighborhoods
- Properties zoned for multifamily development located in the interior of established neighborhoods should be rezoned to a single family classification
- Expanding single family zoning to the edges of neighborhoods to prevent intensification of development
- Neighborhoods that are already being encroached upon with multifamily rezoning should be scaled back, rezoned to single family altogether or rezoned to R-8 where all new development is single family
- Infill development on vacant lots
- Compatible land uses and development should go together
    - o Separation of land uses that does not infringe upon existing neighborhoods
- Commercial redevelopment corridors along major roads
- Many commercial developments within the central planning district (including Matheson, Shamrock and The Plaza) are losing out to newer approved commercial developments in suburban areas
    - o Central Avenue is identified as being aesthetically poor with strip development
- Streetscape improvements, pedestrian facilities, less curb cuts and more planting strips are identified to improve aesthetics
- Planning commission should stop approving new commercial development farther and farther outside of the city
- Aging infrastructure
- Continue to fix poor infrastructure and allocate more funding to the central district to improve on old utility lines, sidewalks, roadways, etc.
- Importance of street trees
- This plan highlights importance of street trees because it enhances Charlotte's "character"
- It supports an active tree replacement, planting and maintenance program for street trees within central district
    - o City should allocate additional resources to concentrate on street trees in the central district
- Preserving historic and architecturally significant areas
- Expand on existing historic districts
- More aggressive policies to pursue measure to protect historic resources, structure and neighborhoods in central district.



- "Subarea 1" Recommendations (includes the Shamrock Drive Complete Street Upgrade area)
- Some of the most desirable and historic housing is within this subarea, but several neighborhoods are in decline
- The neighborhood surrounding the Matheson Avenue/ ThePlaza Shamrock Drive Intersection Study is classified as both fragile (east of The Plaza designated as Villa Heights) and stable neighborhoods (west of The Plaza designated as Plaza Hills)
- Opportunities for Redevelopment
- The Plan criticizes strip development along The Plaza
    - o Recommends to make it an aesthetically pleasing gateway into historic neighborhoods
    - o Maintain the existing land use patterns within the neighborhoods
    - o Leave commercial and more intense land uses along The Plaza and not infringe on single family zoning
- Are there any other adopted development policies for the area? If so, what do these policies imply for the area?
    - o General Development Policies 2007
- Establish a balanced land use pattern that includes a mixture of housing, shopping, employment and civic uses
- Land uses should be connected through both the pedestrian and street system
- Protect and enhance character of existing neighborhoods
- Design development to accommodate the pedestrian and bicyclist in addition to the automobile driver.
- Integrate land use and transportation planning; provide variety of transportation choices and land uses must be organized so that people will want to and be able to use those transportation choices
- Design to encourage pedestrian activity
- Design a good circulation system
- Respect the natural environment

Step 2: Define the Existing and Future Transportation Context

- What is the character of the existing street? How does the street currently relate to the adjacent land uses?
    - o The Plaza is considered a local thoroughfare, connecting Central Avenue to north Charlotte. The project intersection sits between the NoDa, Plaza Midwood and Country Club Heights neighborhoods.
    - o The intersection includes sidewalks on both sides along The Plaza from Holt Street to Downs Avenue, as well as along Matheson Avenue between Holt Street and Attaberry Drive; however, bicyclists and pedestrians are poorly accommodated due to narrow sidewalks at back of curb with no separation from vehicular traffic.



o There are no specific bicycle facilities.

o The street serves both vehicular traffic and pedestrian traffic in getting to the commercial establishments and/or residences in the area, though the facilities could be improved upon.

• How does the street currently function? What are the daily and hourly traffic volumes? Operating and posted speeds what is the LOS for pedestrians? Cyclists? Motorists?

o For traffic volumes, see attached Traffic Volume Figure

o On The Plaza, there are heavy movements (between approximately 1,100-1,700 vph) southbound in the AM peak hour and northbound in the PM peak hour. There is also a decent amount of traffic going east/west (and making the zig-zag movement), anywhere from approximately 600-900 vph, with more traffic heading westbound in the AM peak hour and eastbound in the PM peak hour. The capacity analysis shows that the intersection currently operates at LOS E in both peak hours, and there are significant delays during both peak hours.

o The speed limit on the main roads is 30-35 MPH and 25 MPH on adjacent residential streets. During peak hours, there is congestion, and some roads operate with speeds below the posted speed limit. During off peak hours, there may be issues with vehicles exceeding the speed limit, both along main roads and residential streets.

• What are the current design features, including number of lanes, sidewalk availability, bicycle facilities, traffic control features, street trees, etc.?

o The Plaza is currently a five lane facility with two 12-foot lanes in each direction and a center turn lane at its intersection with Matheson Avenue. The intersection includes sidewalks on both sides along The Plaza from Holt Street to Downs Avenue, as well as along Matheson Avenue between Holt Street and Attaberry Drive

o There are no dedicated bicycle facilities on roadways approaching the intersection although the Matheson leg is currently being planned for buffered bike lanes.

o There is a traffic signal at Matheson Avenue and The Plaza. There are painted crosswalks at all quadrants of the intersection.

• What, if any, transit services are provided? Where are the transit stops?

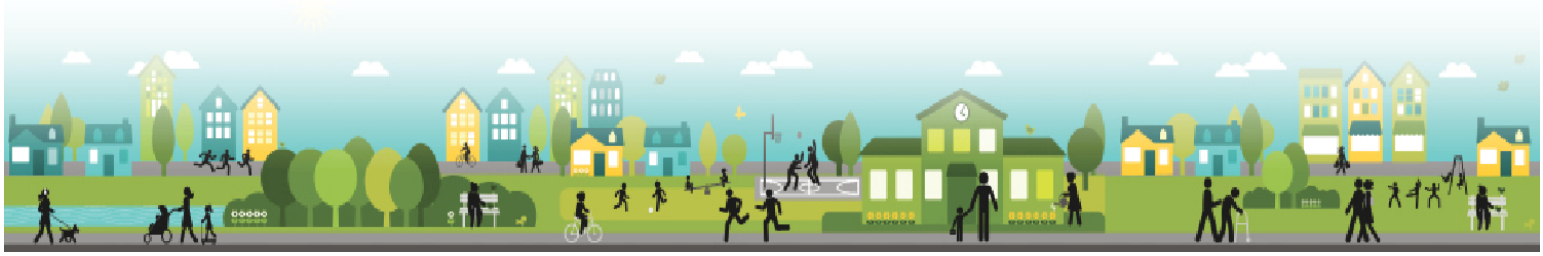
o Bus route 4 runs along The Plaza and South on Matheson Avenue. Bus stops area located at Holt Street and The Plaza, in front of the CVS on The Plaza and on Matheson Avenue near Virginia Avenue.

o Bus route 3 and 23 run along The Plaza north of the project limits, traveling along E. 36thStreet, northwest of The Plaza and east on Anderson Street (route 23).

• What is the relationship between the street segment being analyzed and the surrounding network (streets, sidewalks, transit, and bicycle connections)?

o Decent connectivity among surrounding street segment (somewhat of a block structure).

o There are no dedicated bicycle facilities within project limits, however there is a signed bike route just south of Holt Street and the Plaza along Leigh Avenue, Clemson Avenue (crossing The Plaza) onto Stratford Avenue and continuing south. There is a bike lane north of the project limits at E. 36th Street going northwest of The Plaza.



- o The intersection includes sidewalks on both sides along The Plaza from Holt Street to Down Avenue, as well as along Matheson Avenue between Holt Street and Attaberry Drive.

• Are there any programmed or planned transportation projects in the area that would affect the street segment?

- o Matheson Avenue Road Diet
- o Shamrock Drive Complete Street Upgrade
- o The Plaza Feasibility Study

• Are there any other adopted transportation policies that would affect the classification of the street segment? (*not yet adopted)

- o Charlotte WALKS
- o Charlotte BIKES*
- o CRTPO Metropolitan Transportation Plan 2040 – Intersection has a "fair" and "poor" suitability rating for bicycles
- o Fair: These roads have a higher traffic volume than desirable. Some cyclists tolerate higher traffic volumes if speeds are not too high, and/or multiple travel lanes provide motorists more space to safely pass.
- o Poor: These roads typically have high traffic volumes and higher speed limits (35+ mph). Some bicyclists choose to use these roads only at select times, such as when predictable congestion slows traffic, or when volumes are lowest (i.e. on Sundays or early mornings).

Step 3: Identify Deficiencies

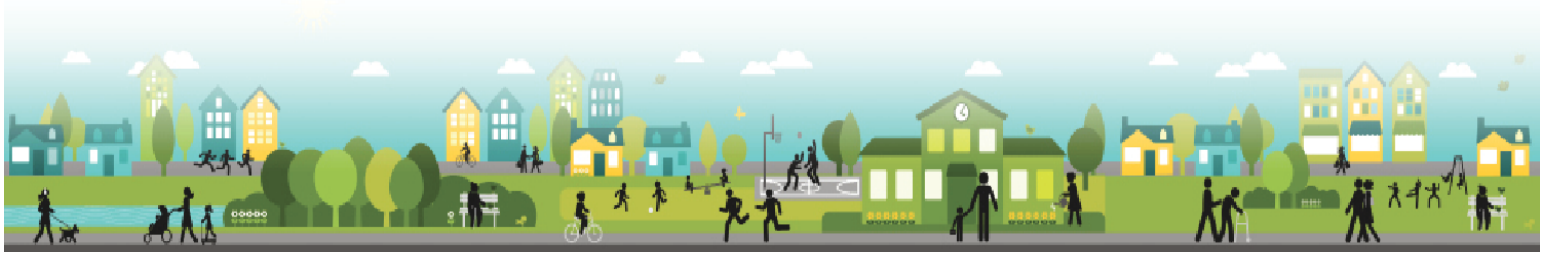
(This step should consider all modes and the relationship between the transportation and land use contexts); deficiencies may include (but are not limited to):

• Gaps in the bicycle or pedestrian network near or along the street segment

- o Sidewalk network has connectivity at intersection and immediate surrounding area.
- o There are no dedicated bicycle facilities within project limits, however there is a signed bike route just south of Holt Street and the Plaza along Leigh Avenue, Clemson Avenue (crossing The Plaza) onto Stratford Avenue and continuing south. There is a bike lane north of the project limits at E. 36th Street going northwest of The Plaza.
- o Opportunity for bicycle connection through this intersection between Clemson Avenue and E. 36th Street

• Gaps in the bicycle or pedestrian network in the area (which may increase the need for facilities on the segment, because of the lack of alternative routes)

- o Bike lanes exist along Kilborne Drive between Eastway and Central Avenue (southeast of the project corridor) and also along E. 36th Street between The Plaza and N. Davidson (northwest of the project corridor)
  - o Opportunity for bicycle connection through this intersection between Clemson Avenue and E. 36th Street



o Shamrock Drive could present a missing piece in connecting the bike lanes between the two locations listed above

o A signed bike route runs along Clemson Avenue, across The Plaza onto Brook Road just south of the project intersection. There is also a bike lane north of the project limits at E. 36th Street going northwest of The Plaza.

• Insufficient pedestrian/bicycle facilities (in poor repair, poorly lighted or not well buffered from traffic)

o Mid-block crossing could be warranted at The Plaza and Holt Street as well as E. 34th Street and The Plaza.

o Sidewalks are narrow and located at back of curb; some are in poor condition

• Gaps in overall street network (includes the amount of connectivity in the area as well as any obvious capacity issues on other segments in the area)

o Connection between Shamrock Drive and 36th Street

• Inconsistencies between the amount or type of transit service provided along the street segment and the types of facilities and/or land uses adjacent to the street

• Inconsistencies between the existing land uses and the features of the existing or planned street network

o Existing sidewalks are narrow and located at back of curb; upgrading or separation of sidewalks would better accommodate pedestrians walking between residential and commercial uses as well as to transit stops.

o Existing network does not support east/west movement well for users.

Step 4: Describe Future Objectives

(This step synthesizes the information from the previous steps into defined objectives for the project; objectives could be derived from plans/policies for the area and identified list of deficiencies. Objectives will form the basis for the street classification and design)

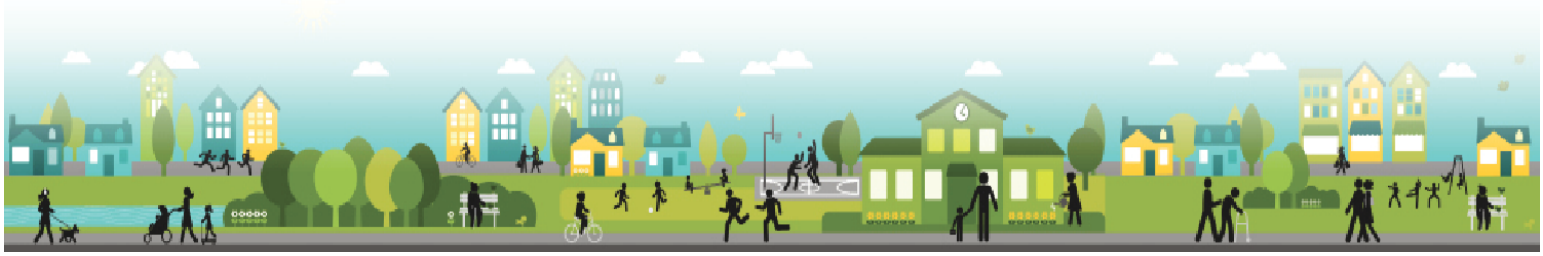
• What existing policies might or should influence the specific objectives for the street?

• What conditions are expected to stay the same (or more importantly, what conditions should stay the same?)

• Would the community and the stakeholders like the street and neighborhood to stay the same or change?

• Why and how would the community and the stakeholders like the street and the neighborhood to change?

• Given this, what conditions are likely to change as a result of classifying the street (exactly how will the street classification and design support the stakeholders' expectations)?



Step 5: Recommend Street Classification and Test Initial Cross-Section

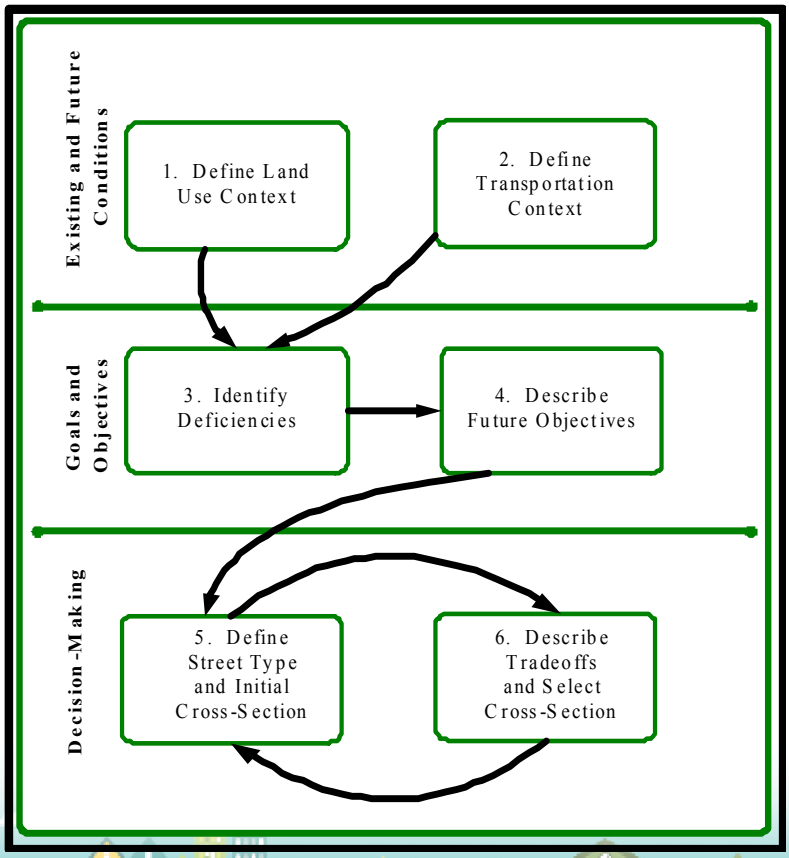
At this point the plan/design team recommends the appropriate USDG street typology based on previous steps. The rationale behind the classification should be documented. This step should also include a recommendation for any necessary adjustments to the land use plan/policy and/or transportation plan for that area.

The initial cross-section should be defined based on the recommended street typology, keeping in mind that some typologies allow more than one option. Since the preferred option is identified, the ideal cross-section will typically include the design features with their preferred dimensions specified for that street type.

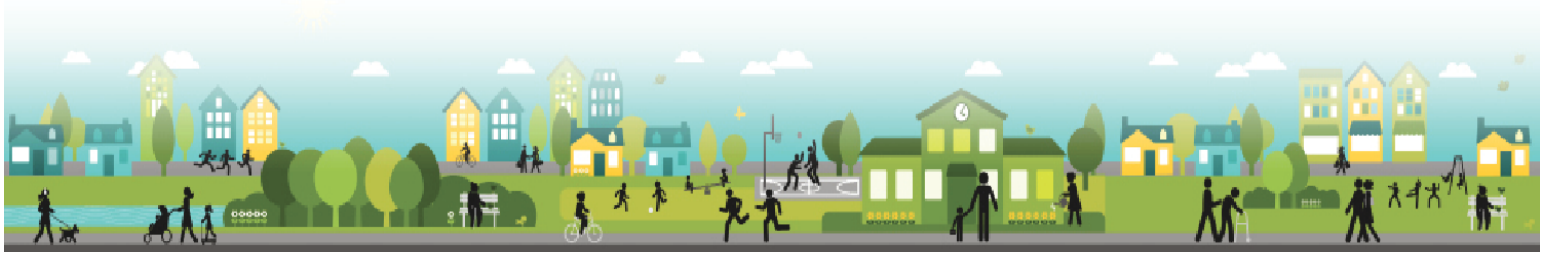
Step 6: Describe the Tradeoffs and Select Cross-Section

If the initial "preferred" cross-section can be applied, then this step is easy: the initial cross-section is the recommended cross-section. In many cases, though, the initial cross-section will need to be refined to better address the land use and transportation objectives given the constraints identified. Sometimes, the technical team will develop more than one alternative design (which would be presented to public).

Any refinements to the initial cross-section (or alts) should result from a thoughtful consideration of tradeoffs among competing uses of existing or future public right-of-way. The tradeoffs should be related to the requirements of each group of stakeholders and the variety of design elements that can best accommodate those requirements. (Matrix at the end of Chapter 2 provides a listing of the general expectations of various stakeholders about streets and elements that might achieve those expectations.)



APPENDIX B- LAND USE



CHARLOTTE.

STV 100 Years

Matheson / Plaza / Shamrock Intersection Study

Existing Land Use and Transportation Context

February 2017

LEGEND

- CATS Bus Stop
- CATS Bus Route
- Bike Lane
- Signed Bike Route
- Sidewalk
- Stream

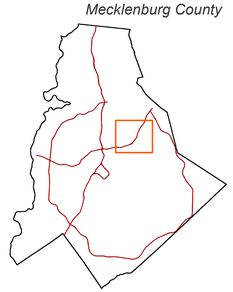
Existing Land Use

- Civic/Institutional
- Horizontal Mixed Use Non-Residential
- Industrial
- Single-Family Residential
- Multi-Family Residential
- Office
- Open Space/Recreation
- Transportation/Utility
- Retail
- Vacant

N
W E
S

0 125 250 500
Feet

Mecklenburg County



Source: Mecklenburg County Open Mapping, City of Charlotte GIS & NC One Map

Matheson / Plaza / Shamrock Intersection Study

Future Land Use and Transportation Context

February 2017

LEGEND

- CATS Bus Stop
- CATS Bus Route
- Bike Lane
- Signed Bike Route
- Sidewalk
- Stream

Future Land Use

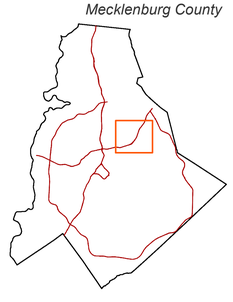
- Civic/Institutional
- Horizontal Mixed Use Non-Residential
- Industrial
- Single-Family Residential
- Multi-Family Residential
- Office
- Open Space/Recreation
- Retail

N W E S

0 125 250 500

Feet

Mecklenburg County



Source: Mecklenburg County Open Mapping, City of Charlotte GIS & NC One Map

APPENDIX C- AREA PROJECTS

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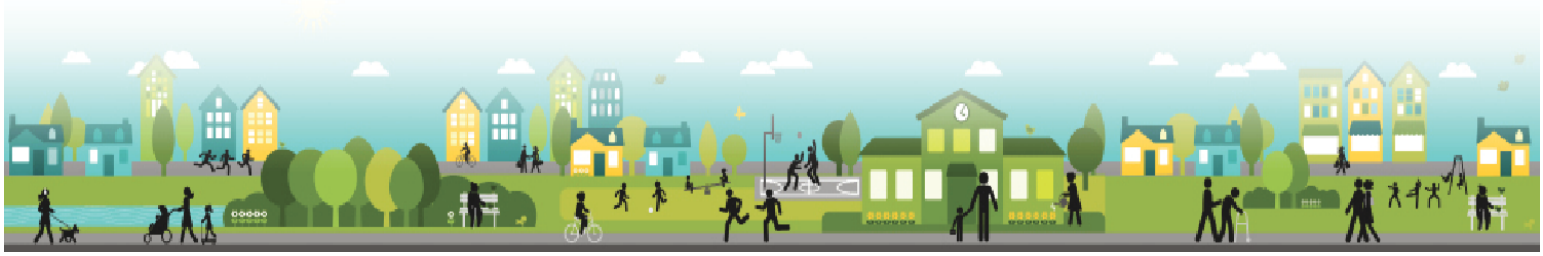
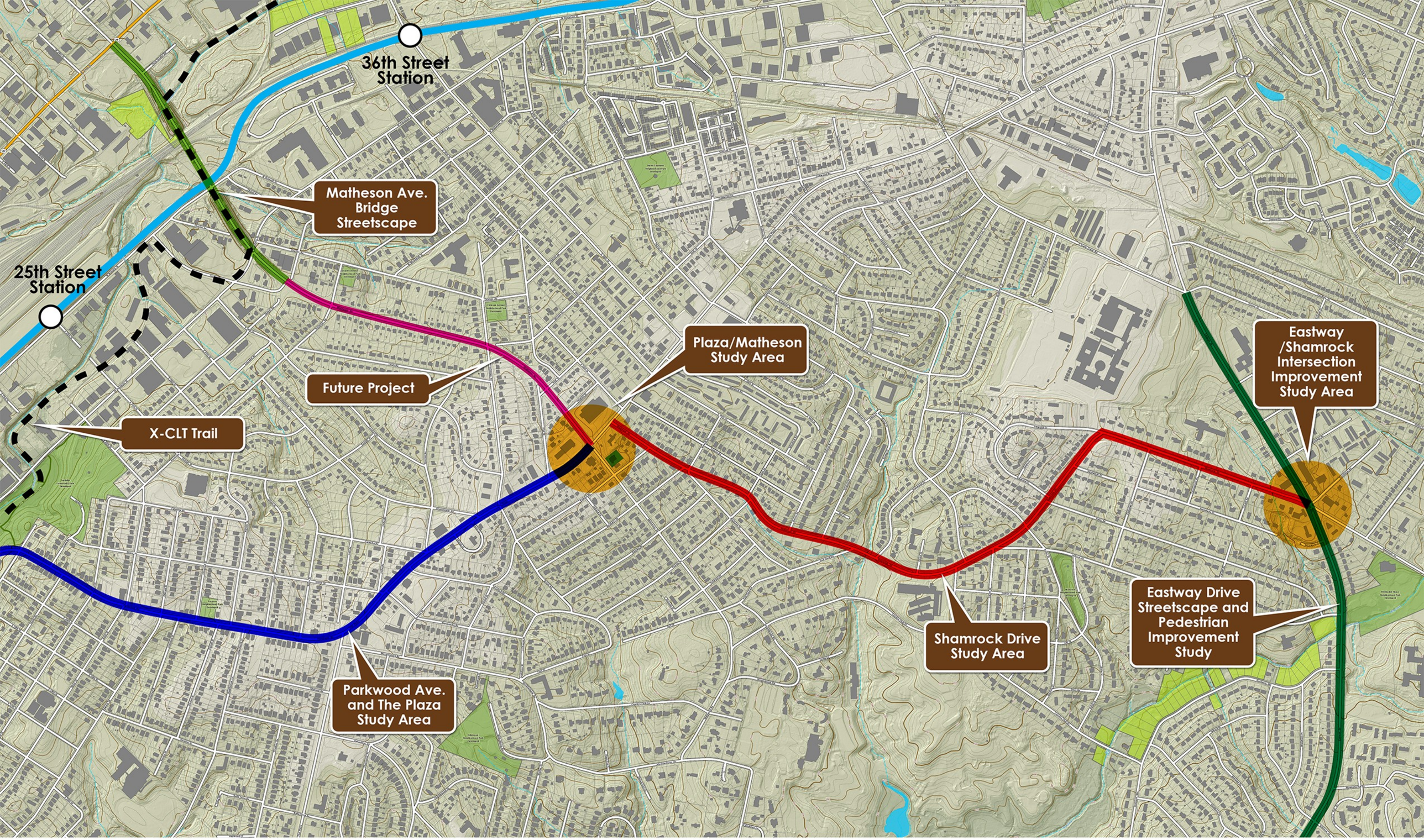




Shamrock/Plaza/Matheson Area Projects

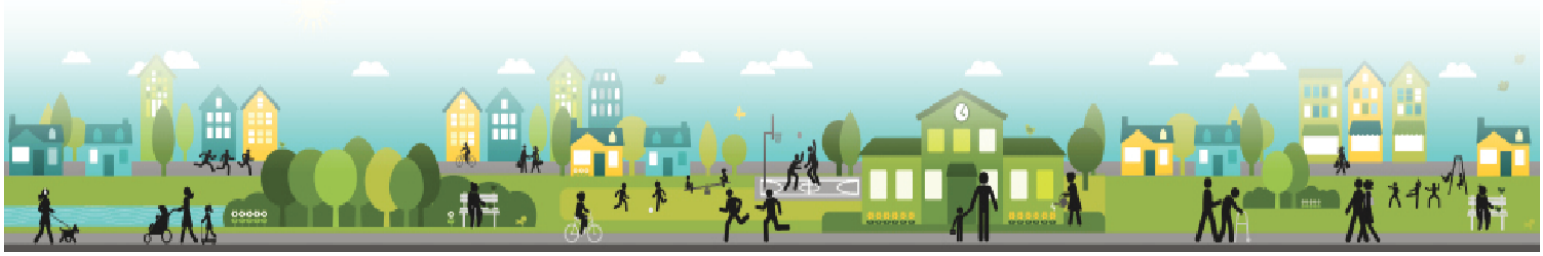
1 Mile

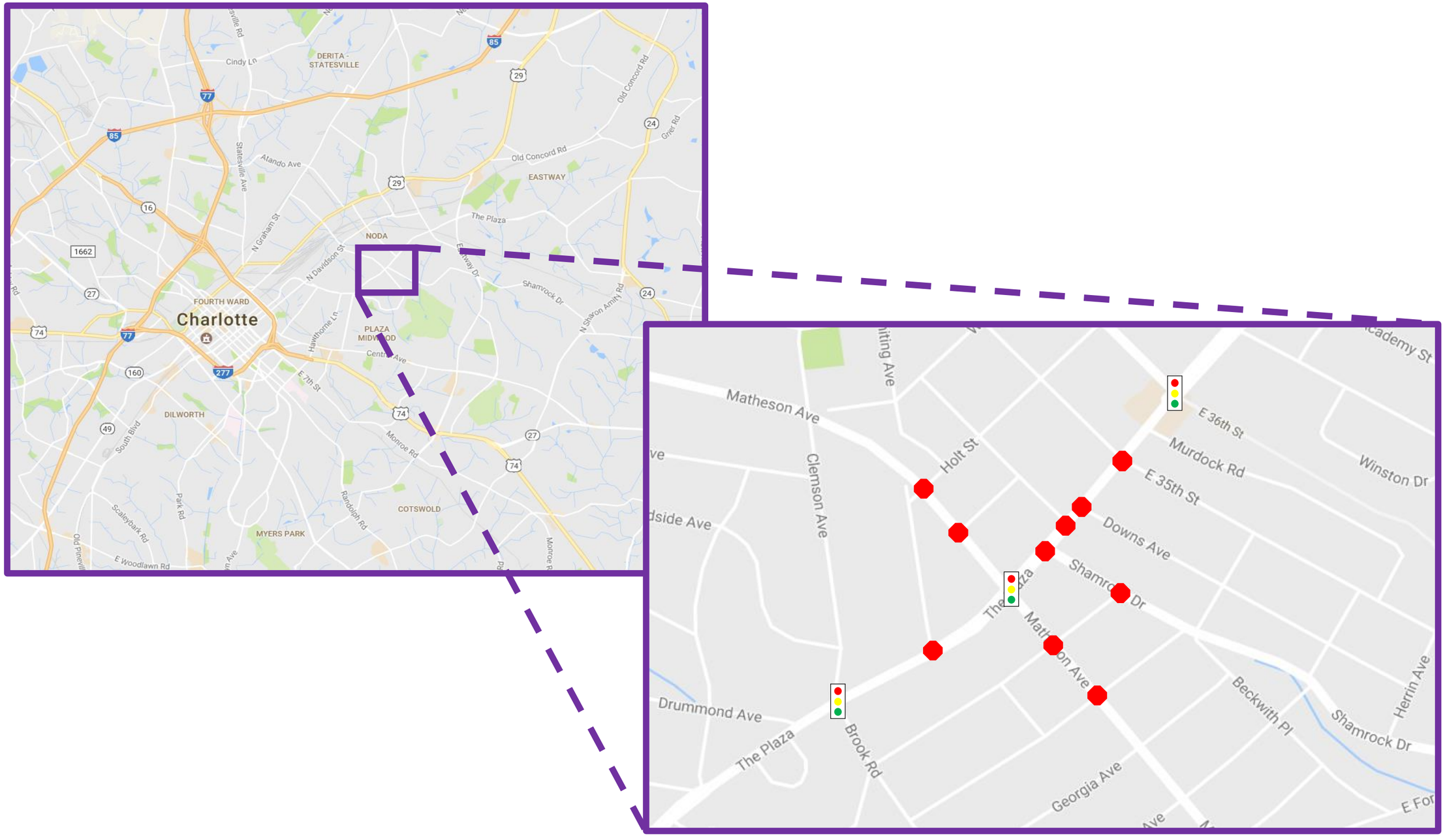
CHARLOTTE.

STV 100 Years

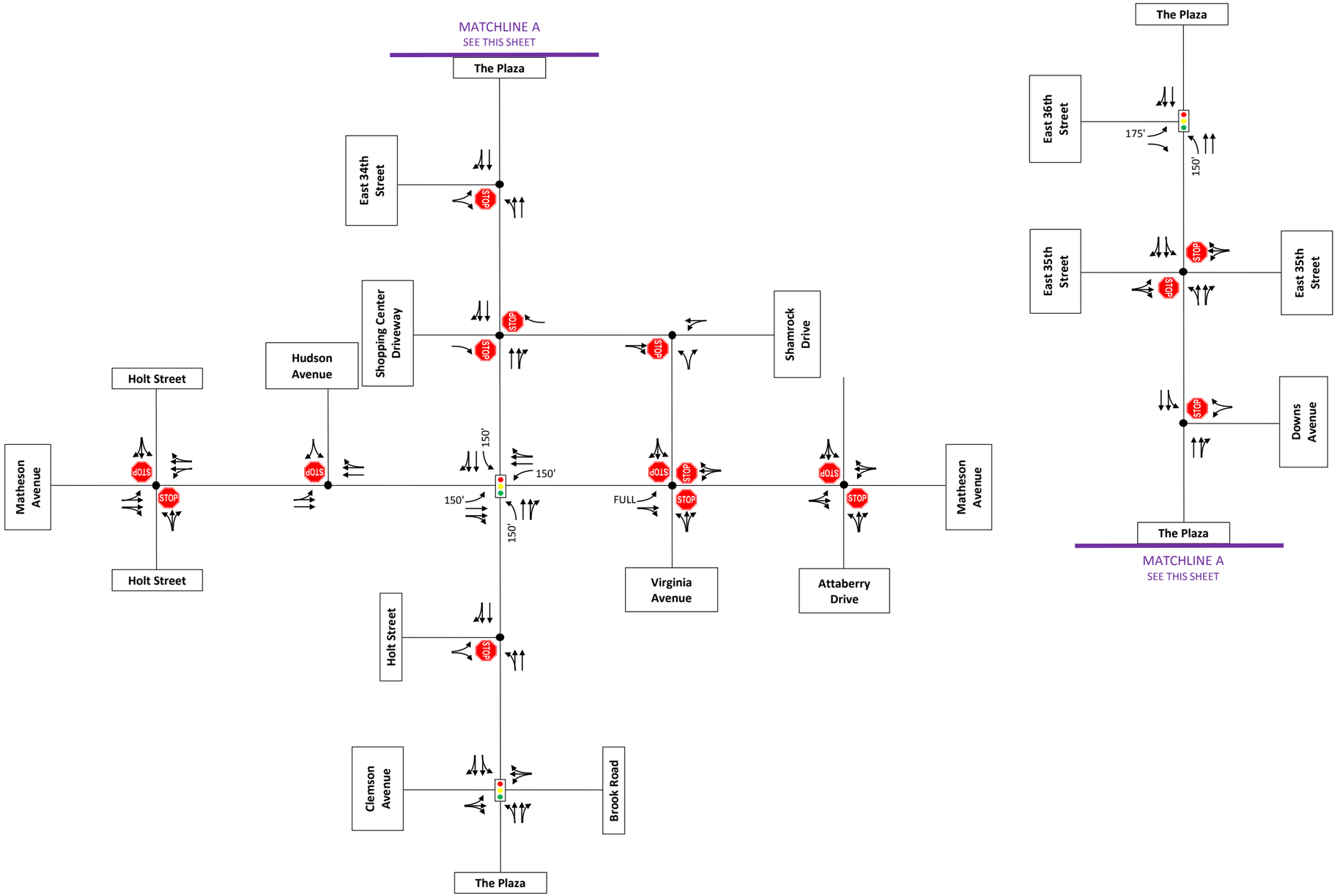
APPENDIX D - TRAFFIC

CHARLOTTE.

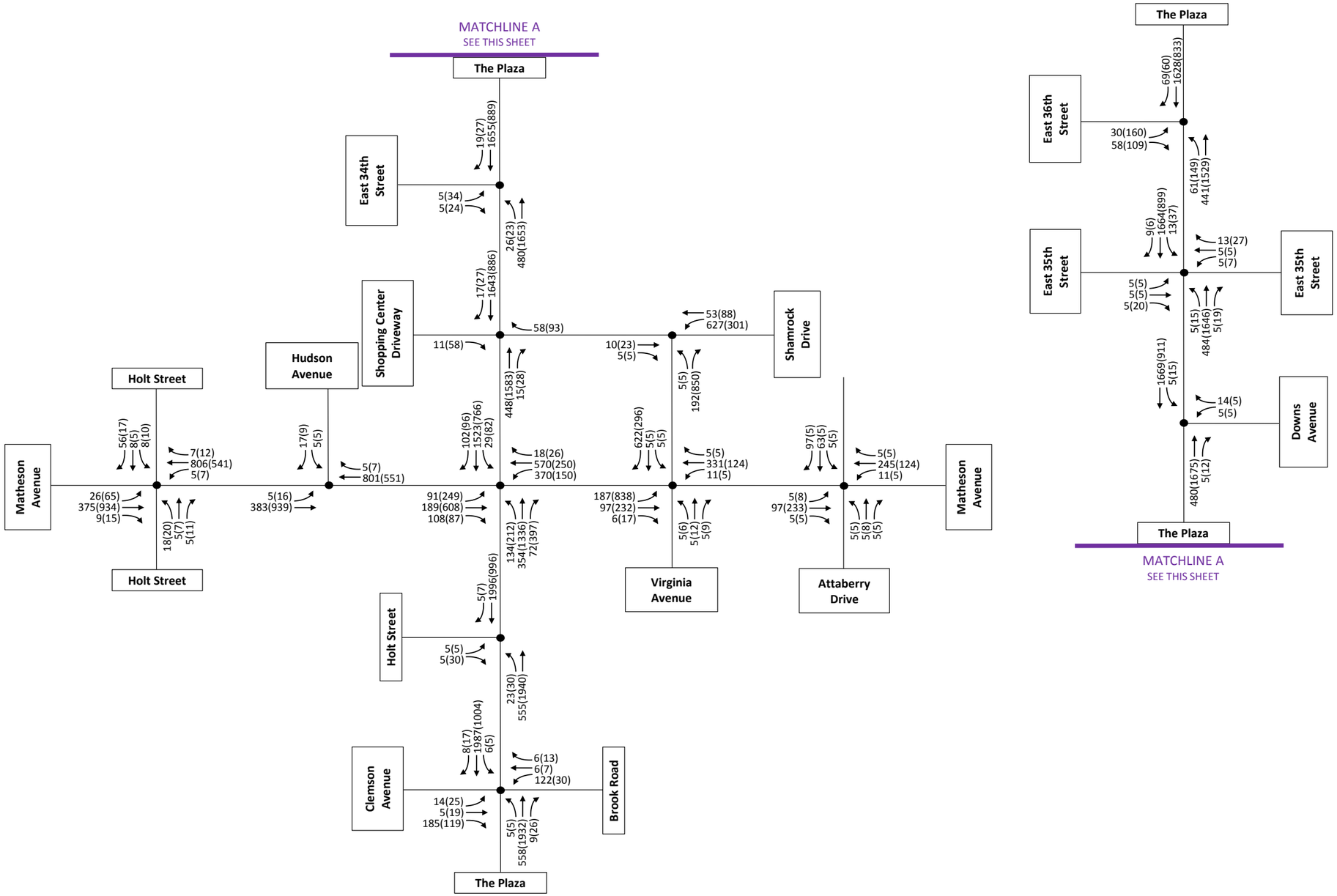




Plaza/Matheson Transportation Study **Charlotte, North Carolina**	Site Vicinity Map Figure 1	Legend Traffic Signal Stop Sign	N	STV 100 Years



Plaza/Matheson Transportation Study **Charlotte, North Carolina**	Existing Lane Geometry Figure 2	Legend Roadway Turning Movement XX' Storage Length Traffic Signal Stop Sign Roundabout N STV 100 Years



Plaza/Matheson Transportation Study
Charlotte, North Carolina

Existing Traffic Volumes

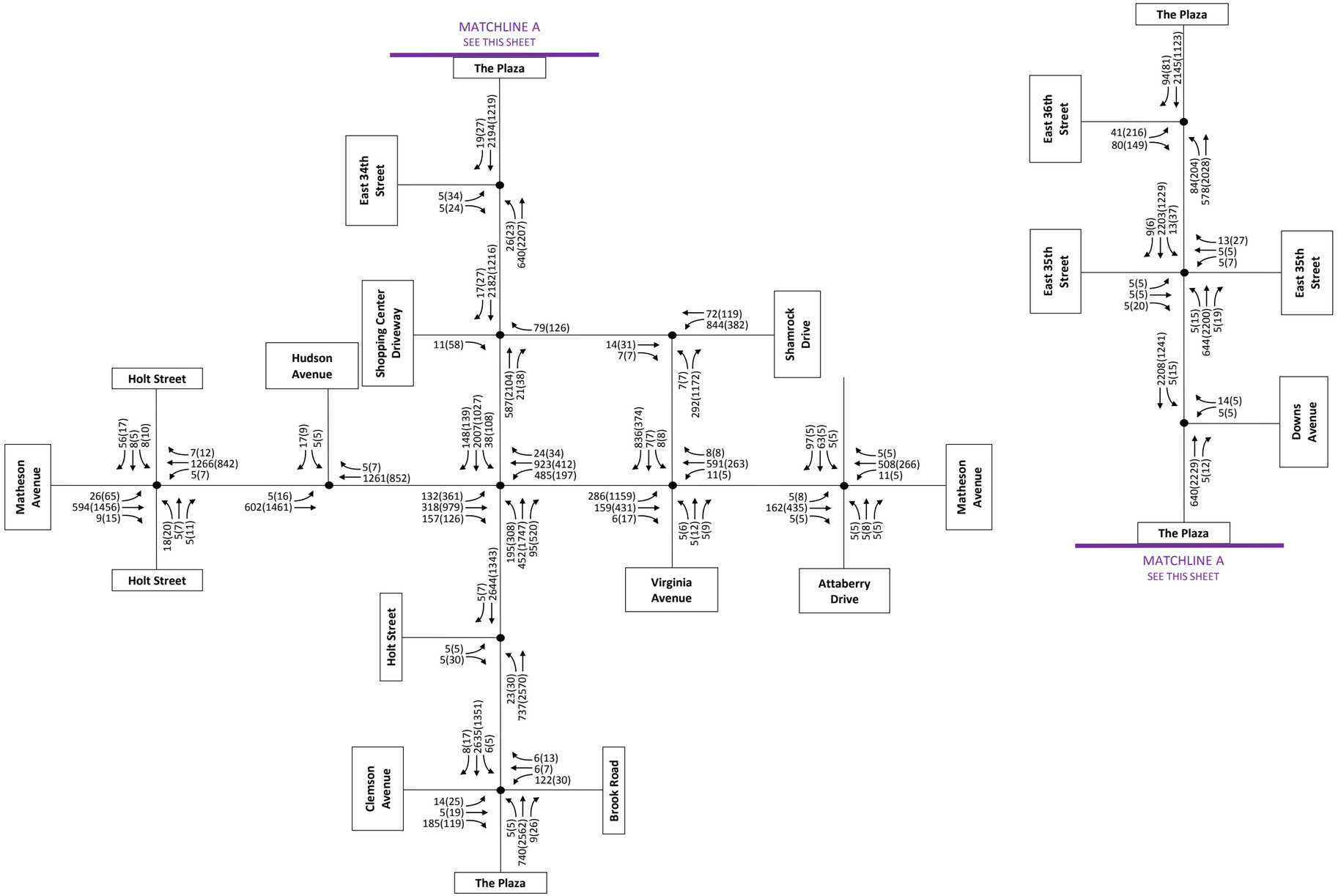
Figure 3

Legend

Roadway
Turning Movement
X(Y) AM and (PM) Peak Hour Volumes
Traffic Signal
Stop Sign
Roundabout

N

STV 100 Years



Plaza/Matheson Transportation Study
Charlotte, North Carolina

Future Traffic Volumes

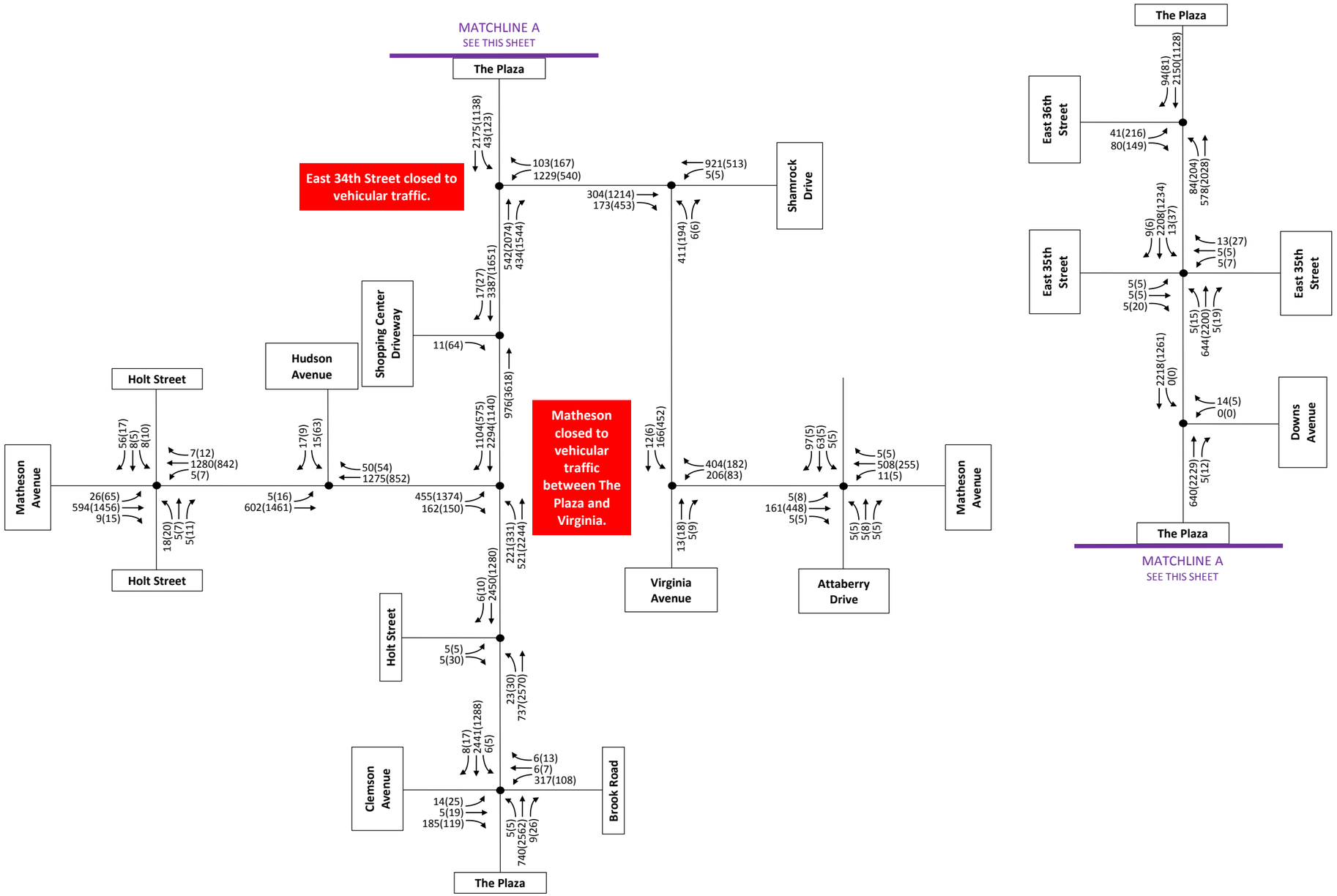
Figure 4

Legend

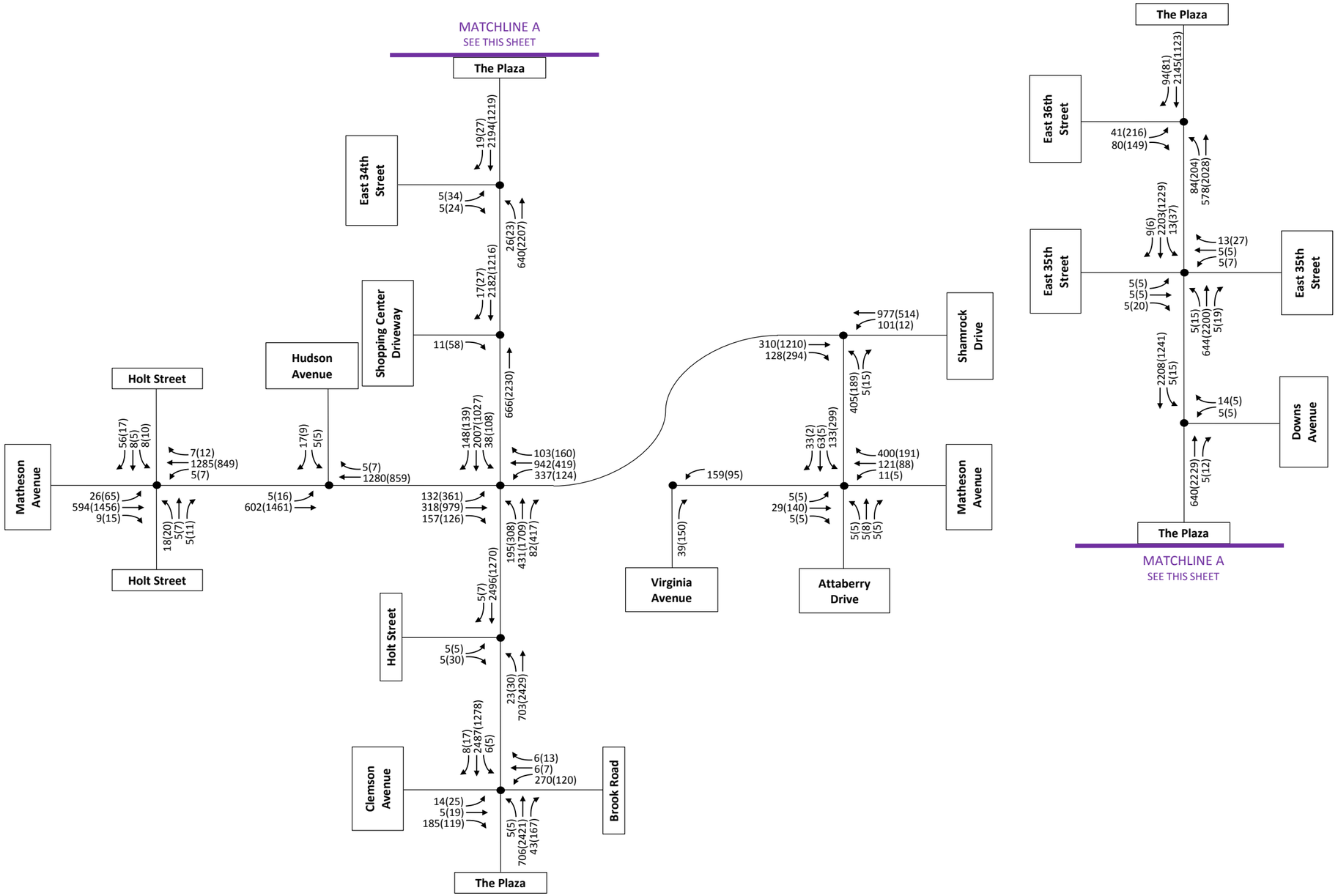
Roadway
Turning Movement
X(Y) AM and (PM) Peak Hour Volumes
Traffic Signal
Stop Sign
Roundabout

N

STV 100 Years



Plaza/Matheson Transportation Study **Charlotte, North Carolina**	Alternative 3 Traffic Volumes Figure 5	Legend Roadway Turning Movement X(Y) AM and (PM) Peak Hour Volumes Traffic Signal Stop Sign Roundabout N



Plaza/Matheson Transportation Study
Charlotte, North Carolina

Alternative 4 Traffic Volumes

Figure 6

Legend

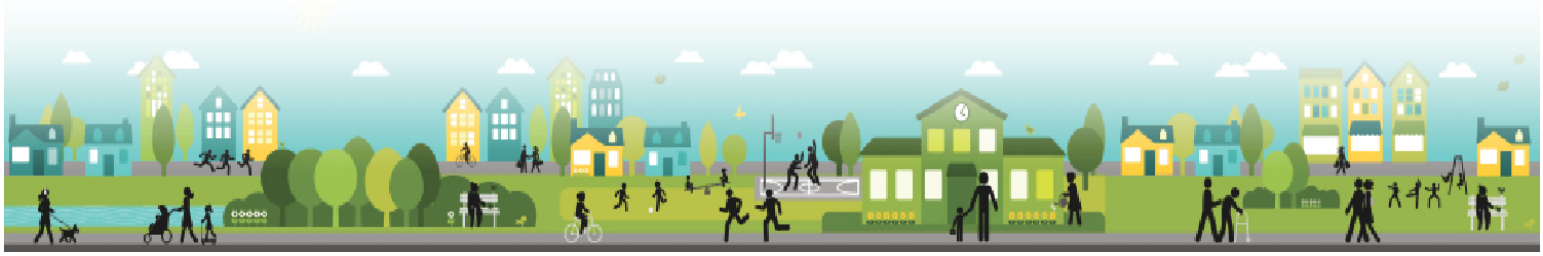
Roadway
Turning Movement
X(Y) AM and (PM) Peak Hour Volumes

Traffic Signal
Stop Sign
Roundabout

N

STV 100 Years

APPENDIX E - CONCEPTUAL ALTERNATIVES



CHARLOTTE

MATHESON AVENUE AND THE PLAZA INTERSECTION IMPROVEMENT PROJECT - Alternative1

50 0 50 100

STV 100 Years

CHARLOTTE

MATHESON AVENUE AND THE PLAZA INTERSECTION IMPROVEMENT PROJECT - Alternative1a

50 0 50 100

STV 100 Years

CHARLOTTE

MATHESON AVENUE AND THE PLAZA INTERSECTION IMPROVEMENT PROJECT - Alternative 2

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STV 100 Years

CHARLOTTE

MATHESON AVENUE AND THE PLAZA INTERSECTION IMPROVEMENT PROJECT - Alternative 2a

50 0 50 100

STV 100 Years

CHARLOTTE

MATHESON AVENUE AND THE PLAZA INTERSECTION IMPROVEMENT PROJECT - Alternative 3

50 0 50 100

STV 100 Years

CHARLOTTE

MATHESON AVENUE AND THE PLAZA INTERSECTION IMPROVEMENT PROJECT - Alternative 4

50 0 50 100

STV 100 Years

CHARLOTTE

MATHESON AVENUE AND THE PLAZA INTERSECTION IMPROVEMENT PROJECT - Alternative 6

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STV 100 Years

APPENDIX F - CONCEPTUAL COST ESTIMATES

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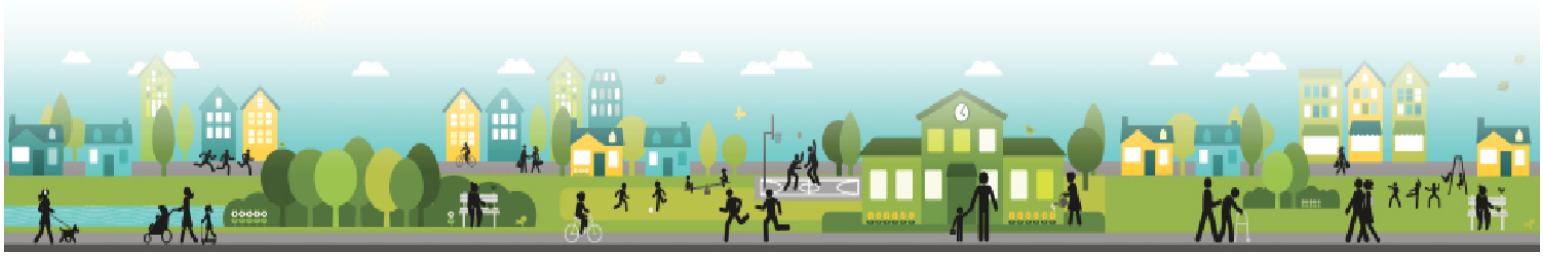

CONCEPTUAL ESTIMATE

Project: Plazamatheson _ Alt-1
Limits: Quandrant Intersection

EST. BY: Narong Phal DATE: 06/13/18

Note : Not include Right of Way Acquisition

Item Description Roadway Items	Unit	Unit Cost	Quantity	Amount	Assumptions:
Mobilization	LS		1	$116,700	
Grading	LS		1	$343,500	
Storm Drainage	LS		1	$304,500	$40 per feet
Asphalt Concrete Base Course, Type B25.0	TON	$55.00	1,895	$104,200	4"
Asphalt Concrete Binder Course, Type I19.0	TON	$55.00	1,124	$61,800	4"
Asphalt Concrete Surface Course, Type S9.5	TON	$50.00	3,724	$186,200	3"
Asphalt Binder for Plant Mix	TON	$610.00	376	$229,600	
2'-6" Concrete Curb & Gutter	LF	$20.00	7,612	$152,200	
4" Concrete Sidewalk	SY	$35.00	5,075	$177,600	
Misc Items	LS		1	$182,300	
Erosion Control	LS		1	$136,700	
Environmental Impact Remediation	LF	$450.00	0	$0	
Water/Sewer Utilities	LS		1	$182,300	
Pavement Markings/Traffic Control	LS		1	$182,300	20%
Landscaping	LS		1	$91,300	
Street Trees	EA	$500.00	158	$79,200	Spaced at 40'

Subtotal	**$2,530,400**			
PCSO Cost	$511,091	$60,000/acre+$150,000/BMP		
Construction Contingency (15%)	$379,600			
Subtotal - Roadway Construction	**$3,421,000**	cost/ft	$899.00	
Planning & Design (20% of Roadway)	$684,000	cost/ft	$200.00	
Private Utility Relocation Cost	$143,000	cost/ft	$38.00	
Right of Way Acquisition	$2,127,000	cost/ft	$559.00	
Subtotal - Non-construction Costs	**$3,000,000**			
Project Subtotal	**$6,421,000**			
Project Contingency (10%)	$642,100			
Estimated Project Cost	**$7,060,000**	Cost/Mile	$9,800,000.00	

CONCEPTUAL ESTIMATE

Project: Plazamatheson _ Alt-1A
Limits: Quandrant Intersection

EST. BY: Narong Phal DATE: 06/13/18

Item Description Roadway Items	Unit	Unit Cost	Quantity	Amount	Assumptions:
Mobilization	LS		1	$130,700	
Grading	LS		1	$390,400	
Storm Drainage	LS		1	$300,900	40$/ft
Asphalt Concrete Base Course, Type B25.0	TON	$55.00	1,886	$103,700	4"
Asphalt Concrete Binder Course, Type I19.0	TON	$55.00	1,124	$61,800	4"
Asphalt Concrete Surface Course, Type S9.5	TON	$50.00	3,691	$184,500	3"
Asphalt Binder for Plant Mix	TON	$610.00	374	$228,000	
2'-6" Concrete Curb & Gutter	LF	$20.00	7,522	$150,400	
4" Concrete Sidewalk	SY	$35.00	5,015	$175,500	
Roundabout	EA	$100,000.00	2	$200,000	
Traffic Control for Roundabout	EA	$25,000.00	2	$50,000	
Misc Items	LS		1	$180,800	
Erosion Control	LS		1	$135,600	
Water/Sewer Utilities	LS		1	$180,800	
Pavement Markings/Traffic Control	LS		1	$180,800	20%
Landscaping	LS		1	$90,300	
Street Trees	EA	$500.00	158	$79,200	Spaced at 40'

Subtotal	**$2,823,400**		
PCSO Cost	$511,091	$60,000/acre+$150,000/BMP	
Construction Contingency (15%)	$423,500		
Subtotal - Roadway Construction	**$3,758,000**	cost/ft	$999.00
Planning & Design (20% of Roadway)	$752,000	cost/ft	$200.00
Private Utility Relocation Cost	$143,000	cost/ft	$38.00
Right of Way Acquisition	$2,370,000	cost/ft	$630.00
Subtotal - Non-construction Costs	**$3,300,000**		
Project Subtotal	**$7,058,000**		
Project Contingency (10%)	$705,800		
Estimated Project Cost	**$7,760,000**	Cost/Mile	$10,900,000.00

CONCEPTUAL ESTIMATE

Project: Plazamatheson _ Alt-2
Limits: Roundabouts

EST. BY: Narong Phal DATE: 06/13/18

Item Description Roadway Items	Unit	Unit Cost	Quantity	Amount	Assumptions:
Mobilization	LS		1	$168,500	
Grading	LS		1	$507,300	
Storm Drainage	LS		1	$368,900	$40 per feet
Asphalt Concrete Base Course, Type B25.0	TON	$55.00	2,176	$119,700	4"
Asphalt Concrete Binder Course, Type I19.0	TON	$55.00	1,241	$68,300	4"
Asphalt Concrete Surface Course, Type S9.5	TON	$50.00	4,415	$220,700	3"
Asphalt Binder for Plant Mix	TON	$610.00	439	$267,700	
2'-6" Concrete Curb & Gutter	LF	$20.00	9,222	$184,400	
4" Concrete Sidewalk	SY	$35.00	6,148	$215,200	
Misc Items	LS		1	$215,200	
Roundabout	EA	$100,000.00	4	$400,000	
Traffic Control for Roundabout	EA	$25,000.00	4	$100,000	
Erosion Control	LS		1	$161,400	
Water/Sewer Utilities	LS		1	$215,200	
Pavement Markings/Traffic Control	LS		1	$215,200	20%
Landscaping	LS		1	$110,700	
Street Trees	EA	$500.00	175	$87,500	Spaced at 40'

Subtotal	**$3,625,900**		
PCSO Cost	$517,488	$60,000/acre+$150,000/BMP	
Construction Contingency (15%)	$543,900		
Subtotal - Roadway Construction	**$4,687,000**	cost/ft	$1,016.00
Planning & Design (20% of Roadway)	$937,000	cost/ft	$200.00
Private Utility Relocation Cost	$143,000	cost/ft	$31.00
Right of Way Acquisition	$4,411,000	cost/ft	$957.00
Subtotal - Non-construction Costs	**$5,500,000**		
Project Subtotal	**$10,187,000**		
Project Contingency (10%)	$1,018,700		
Estimated Project Cost	**$11,210,000**	Cost/Mile	$12,800,000.00

CONCEPTUAL ESTIMATE

Project: Plazamatheson _ Alt-2A
Limits: Roundabouts

EST. BY: Narong Phal DATE: 06/13/18

Item Description Roadway Items	Unit	Unit Cost	Quantity	Amount	Assumptions:
Mobilization	LS		1	$134,500	
Grading	LS		1	$401,800	
Storm Drainage	LS		1	$304,100	40$/ft
Asphalt Concrete Base Course, Type B25.0	TON	$55.00	2,012	$110,600	4"
Asphalt Concrete Binder Course, Type I19.0	TON	$55.00	1,241	$68,300	4"
Asphalt Concrete Surface Course, Type S9.5	TON	$50.00	3,816	$190,800	3"
Asphalt Binder for Plant Mix	TON	$610.00	393	$239,600	
2'-6" Concrete Curb & Gutter	LF	$20.00	7,602	$152,000	
4" Concrete Sidewalk	SY	$35.00	5,068	$177,400	
Roundabout	EA	$100,000.00	2	$200,000	
Traffic Control for Roundabout	EA	$25,000.00	2	$50,000	
Misc Items	LS		1	$187,700	
Erosion Control	LS		1	$140,800	
Water/Sewer Utilities	LS		1	$187,700	
Pavement Markings/Traffic Control	LS		1	$187,700	20%
Landscaping	LS		1	$91,200	
Street Trees	EA	$500.00	175	$87,500	Spaced at 40'

Subtotal	**$2,911,700**		
PCSO Cost	$517,488	$60,000/acre+$150,000/BMP	
Construction Contingency (15%)	$436,800		
Subtotal - Roadway Construction	**$3,866,000**	cost/ft	$1,017.00
Planning & Design (20% of Roadway)	$773,000	cost/ft	$200.00
Private Utility Relocation Cost	$143,000	cost/ft	$38.00
Right of Way Acquisition	$3,510,000	cost/ft	$923.00
Subtotal - Non-construction Costs	**$4,400,000**		
Project Subtotal	**$8,266,000**		
Project Contingency (10%)	$826,600		
Estimated Project Cost	**$9,090,000**	Cost/Mile	$12,600,000.00

CONCEPTUAL ESTIMATE

Project: Plazamatheson _ Alt-3
Limits: Offset Left

EST. BY: Narong Phal DATE: 06/13/18

Item Description Roadway Items	Unit	Unit Cost	Quantity	Amount	Assumptions:
Mobilization	LS		1	$99,100	
Grading	LS		1	$303,300	
Storm Drainage	LS		1	$268,900	40$/ft
Asphalt Concrete Base Course, Type B25.0	TON	$55.00	1,674	$92,000	4"
Asphalt Concrete Binder Course, Type I19.0	TON	$55.00	992	$54,600	4"
Asphalt Concrete Surface Course, Type S9.5	TON	$50.00	3,289	$164,400	3"
Asphalt Binder for Plant Mix	TON	$610.00	332	$202,700	
2'-6" Concrete Curb & Gutter	LF	$20.00	6,722	$134,400	
1'-6" Concrete Curb & Gutter	LF	$15.00	0	$0	
4" Concrete Sidewalk	SY	$35.00	4,481	$156,800	
Valley gutter	LF	$15.00	0	$0	
Textured Turn Lane	SF	$11.00	0	$0	
Misc Items	LS		1	$161,000	
Erosion Control	LS		1	$120,700	
Environmental Impact Remediation	LF	$450.00	0	$0	
Water/Sewer Utilities	LS		1	$161,000	
Pavement Markings/Traffic Control	LS		1	$80,500	20%
Landscaping	LS		1	$80,700	
Pedestrian Lights	EA	$5,000.00	0	$0	Spaced at 100'
Street Trees	EA	$500.00	140	$69,950	Spaced at 40'
Culvert Upgrade	EA	$75,000.00	0	$0	

Subtotal	**$2,150,050**		
PCSO Cost	$503,950	$60,000/acre+$150,000/BMP	
Construction Contingency (15%)	$322,500		
Subtotal - Roadway Construction	**$2,977,000**	cost/ft	$886.00
Planning & Design (20% of Roadway)	$595,000	cost/ft	$200.00
Private Utility Relocation Cost	$143,000	cost/ft	$43.00
Right of Way Acquisition	$3,260,000	cost/ft	$970.00
Subtotal - Non-construction Costs	**$4,000,000**		
Project Subtotal	**$6,977,000**		
Project Contingency (10%)	$697,700		
Estimated Project Cost	**$7,670,000**	Cost/Mile	$12,000,000.00

CONCEPTUAL ESTIMATE

Project: Plaza Matheson_Alt-4
Limits: Realignment South of Cell Tower

EST. BY: Jed Sander DATE: 06/13/18

Item Description Roadway Items	Unit	Unit Cost	Quantity	Amount
Mobilization	LS		1	$200,000
Grading (20%)	LS		1	$593,700
Storm Drainage	LS		1	$408,200
Asphalt Concrete Base Course, Type B25.0	TON	$70.00	1,920	$134,400
Asphalt Concrete Binder Course, Type I19.0	TON	$70.00	1,510	$105,700
Asphalt Concrete Surface Course, Type S9.5	TON	$70.00	3,820	$267,400
Asphalt Binder for Plant Mix	TON	$700.00	390	$273,000
2'-6" Concrete Curb & Gutter	LF	$20.00	6,250	$125,000
4" Concrete Sidewalk	SY	$50.00	4,100	$205,000
6" Concrete Driveway	SY	$79.00	2,810	$222,000
5" Monolithic Island (Surface Mounted)	SF	$55.00	2,890	$159,000
Misc Items	LS		1	$474,900
Water/Sewer Utilities	LS		1	$593,700
Pavement Markings/Traffic Control	LS		1	$356,200
Landscaping	LS		1	$81,600
Erosion Control	LS		1	$118,700
Subtotal				**$4,318,500**

PCSO Cost	$531,694
Construction Contingency (20%)	$863,700
Subtotal - Roadway Construction	**$5,714,000**
Planning & Design (15%)	$857,000
Private Utility Relocation Cost	$143,000
ROW Acquisition	$6,322,000
Subtotal - Non-construction Costs	**$7,300,000**
Project Subtotal	**$13,014,000**
Project Contingency (10%)	$1,301,400
Estimated Total Cost	**$14,320,000**

CONCEPTUAL ESTIMATE

Project: Plaza Matheson _ Alt-6
Limits: Shamrock Aligned with 34th Street

EST. BY: Jed Sander DATE: 06/13/18

Item Description Roadway Items	Unit	Unit Cost	Quantity	Amount
Mobilization	LS		1	$217,000
Grading (20%)	LS		1	$642,200
Storm Drainage	LS		1	$508,800
Asphalt Concrete Base Course, Type B25.0B	TON	$70.00	2,450	$171,500
Asphalt Concrete Binder Course, Type I19.0B	TON	$70.00	1,830	$128,100
Asphalt Concrete Surface Course, Type S9.5B	TON	$70.00	4,640	$324,800
Asphalt Binder for Plant Mix	TON	$700.00	475	$332,500
2'-6" Concrete Curb & Gutter	LF	$20.00	8,480	$169,600
4" Concrete Sidewalk	SY	$50.00	4,940	$247,000
6" Concrete Driveway	SY	$79.00	1,670	$131,900
5" Monolithic Island (Surface Mounted)	SF	$55.00	740	$40,700
Misc Items	LS		1	$513,700
Water/Sewer Utilities	LS		1	$642,200
Pavement Markings/Traffic Control	LS		1	$385,300
Landscaping	LS		1	$101,800
Erosion Control	LS		1	$128,400
Subtotal				**$4,685,500**

PCSO Cost	$549,298
Construction Contingency (20%)	$937,100
Subtotal - Roadway Construction	**$6,172,000**
Planning & Design (15%)	$926,000
Private Utility Relocation Cost	$143,000
Right of Way Acquisition	$5,061,934
Subtotal - Non-construction Costs	**$6,100,000**
Project Subtotal	**$12,272,000**
Project Contingency (10%)	$1,227,200
Estimated Project Cost	**$13,500,000**

Assumptions:

Mobilization & Grading Totals $859,200
40$/ft
4"
4"
3"

20%

$60,000/acre+$150,000/BMP

cost/ft $1,456.00
cost/ft $200.00
cost/ft $34.00
cost/ft $1,194.00

Cost/Mile $16,800,000.00

PLAZA-MATHESON INTERSECTION STUDY / ESTUDIO DE INTERCCESIÓN